Musical Composition and ICT: Children, computers and new musical ideas

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Abstract

An investigation into children composing music with computers demonstrated complex and unconventional uses of rhythm, harmony and melodic structure, as well as approaches to the compositional process that indicated that the children’s musical perceptions and understandings were very different to those of adults and to those represented in the literature.

Using qualitative methodological approaches with roots firmly attached to the ideas of post positivist paradigms the study presents a narrative account of events and actions. It makes strong connections to the Ecological Approach to Visual Perception as present by James Gibson by investigating the all-important relationship that exists between the child and the computer. The human/computer relationship is also significantly important in the actual analysis of the children’s works; the compositions were analysed using the same software with which they were composed. This allowed for a deep investigation of compositional processes that went beyond analysis of music as an expression of sound.

The seven participants, aged between ten and twelve years, produced 261 compositions over the period of a school year. Analysis of these compositions produced a typology of compositional approaches based on play; which is examined in detail. In addition to this typology, significant compositional features that include extreme rhythmic, harmonic and tonal dissonances were identified, these features are also presented.

The process of data collection and analysis revealed an inexorable link between the children’s actions and the act of play. The centrality of play is identified as significantly important to the compositions and the compositional approaches. Through the consideration of the role of play, the notion of metaphor (in language, music and play itself) and the importance of the electronic environment, the thesis asks educators and researchers to consider alternatives to the application of adult western cultural perspectives to what is an expression of childhood.
Declaration

This is to certify that:

   i. the thesis comprises only my original work towards the PhD

   ii. due acknowledgement has been made in the text to all other material used

   iii. the thesis is less than 100,000 words in length, exclusive of tables, maps, bibliographies and appendices

Nicholas James Reynolds

Signed ____________________________

Date _________________________
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Nick Reynolds
Publications Arising from this Work

Peer Reviewed Publications


Non-Peer Reviewed Publications


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Definition of Technical Terms

Every discipline uses its own technical terms and jargon; the field of digital audio is no exception. The two software applications used in the study are described later in this chapter but in order to assist in the understanding of the software and the language surrounding it, the following list is provided.

**Bank:** Patches (sounds) are frequently presented in banks or groups of sounds. The General Midi (GM) sound canvas is one such bank. *Cakewalk* software can be made to identify individual synthesisers and will represent the banks of those synthesisers.

**File Formats:** Both software applications save project data in their own proprietary formats. These formats are described in detail in the ‘Software’ section below. The participants saved their finished (sometimes not finished) compositions in the following ways:

- **.mid files:** midi data that can be played by any media software and through web browsers
- **.mp3 files:** compressed digital audio data that can be played by any media software and through web browsers, usually in stereo format
- **.wav files:** uncompressed digital audio data that can be played by any media software and through web browsers, usually in stereo format

*Cakewalk* saves files as proprietary project work files (.cwk) or project bundle files (.cwb) as well as to midi files (.mid) and wave files (.wav).

*Audacity* saves as project files (.aup) as well as exporting to .wav, .mp3 and .ogg formats.

**General Midi (GM):** A universally agreed upon set of 128 sounds that make up the GM canvas. These sounds include effects, synthesiser patches, ‘real’ musical instrument sounds and drum sets.

**Midi:** Musical Instrument Digital Interface: A protocol that enables two-way communication between a computer and a synthesiser or other tone generating device. Midi data does not contain any actual audio data, rather it is a series of ‘events’ (midi
term) or instructions about note pitch, note duration and note value; sound, velocity, effect and so on that have been played into the computer through a synthesiser. In this study Cakewalk was the only program that could process midi data. When a midi file is played it tells a midi tone generator what to play. Midi operates in sixteen discreet channels with Channel 10 usually reserved for midi drums. Different synthesisers and tone generators can produce different midi sounds and have varying capacity for polyphony; the number of notes (16, 32, 64, 128 and so forth) that can be played back at one time.

**Multitrack:** Both software applications used in this study operate in a multitrack environment. That is, multiple recordings (tracks) can be presented in the one project and played at the same time. Each track in that project can be edited individually and can be muted or soloed as required. Standard music recorders like *Windows Sound Recorder* only allow for single tracks to be recorded or played at the same time, much in the same way that an audio tape or cassette recorder only allows for one track to be played or recorded. Multitrack projects are usually ‘mixed down’ to a single stereo track that can be played in software such as *Windows Media Player* or *iTunes*, or burned to CD.

**Patch:** This term originates from the time when synthesisers required the user to ‘patch’ or connect oscillators together through cables (patch cables) to generate tones. Today, synthesisers use preset patches (sounds) that approximate original analogue synthesiser sounds or other instruments. Some also allow for the creation and editing of patches.

**Synthesiser:** In this study I use the term, synthesiser, to mean a midi keyboard. That is a keyboard that can communicate with a computer to produce sounds via midi. Of the two types of keyboard I used in this study, only one, the *Yamaha W7*, could actually produce its own sounds (act as a tone generator), it is a true synthesiser because it can be programmed to create new sounds as well as play its on board sounds. The other type, the *Roland PC300*, does not produce sound but allows for midi data to be recorded through its keyboard (to be played in). Sound is produced through an external tone generator; in this case the computer’s sound card.
**Wave:** In this setting a wave is a digital representation of an actual sound (as opposed to midi which is a series of events). In this study wave data was saved as .wav (uncompressed) and as .mp3 (compressed) file formats. Both programs, *Cakewalk* and *Audacity* could handle wave data in these formats.
Chapter 1

Introduction

Thus, little by little the subversive features of the computer were eroded away: Instead of cutting across and so challenging the very idea of subject boundaries, the computer now defined a new subject; instead of changing the emphasis from impersonal curriculum to excited live exploration by students, the computer was now used to reinforce School’s ways. What had started as a subversive instrument of change was neutralised by the system into an instrument of consolidation (Papert, 1993a, p. 39).

This thesis is an investigation of the electronic compositions and the compositional processes of children. Of course as with any study of this size it is about much more than that. It was not undertaken to discover new and better ways to teach music or better ways to use computers in schools; it may well be that it does identify ways to teach and use computers but that is not its purpose. While it has ended up being about more than children composing it did not start out as anything more.

The study is informed by an earlier study (Reynolds, 2001) and in the naivety of a novice researcher I thought that having done the early study would make this larger work somehow simpler; a larger version of the original. Nothing could be further from what happened. The early study sought to investigate if children could work in the complex environment of professional level music software. In that study they showed that they could. Having successfully shown that it was reasonable to expect children to use adult software to compose music, I thought that investigating what they actually did in that environment (what they composed and how they composed it) would be a fascinating voyage of discovery.

My belief at the end of my earlier work was that I was seeing approaches to music making that were different from those that I had seen presented in the literature. I was fascinated by the notion of stages of musical development but questioned the relevance of such in this brave new electronic world. When I commenced the current study one of my intentions was to challenge this notion or to redevelop it. There is much in the literature about children’s compositions and compositional processes but
I felt that something significant was missing. Researchers such as Margaret Barrett (1999, 2002, 2003), Pamela Burnard (2000, 2007) and Kathryn Marsh (Marsh, 2009; Marsh & Young, 2006) have presented ideas about children’s music making that asks researchers to think differently; it is this area that interested me. I was also very interested in seeing if I could demonstrate ways in which the electronic environment allowed children to work differently and in effect challenge the significantly important work of Keith Swanwick and June Tillman (1986). I wondered if it was possible that their sequence of musical development really applied any more. Did the electronic environment change it? As my study progressed this area of investigation seemed to become less important to me and I found that my focus shifted from the somewhat unnecessary attempts to prove or disprove something to a focus that was instead concerned with presenting a case for examining children’s works with new eyes and from new perspectives.

This is a work about learning; learning from children about children, and learning through and with computers about how children create, compose, think musically and interact with each other and their environment. It is not about teaching but it serves to provide an understanding about children that hopefully will inform the way we teach. The approaches that I took to the framing of compositional tasks were not based on any desire to ‘teach’ composition or to teach musical elements. I wanted to provide opportunities for the children to interact musically and to produce music that was computer supported. In the development and design of this study it was necessary to provide examples of the ways in which I expected the children to work and I had in mind specific tasks and strategies that I believed would provide appropriate compositional frameworks.

The study was designed to fit into a regular school music program and accordingly, as the teacher of that class, I needed to ensure that I was mindful of the curriculum outcomes that were expected. As it turned out, the study occurred out of class time but that did not change my pedagogical approach or my sense of awareness of curriculum. Neither musical ability nor lack of it was a prerequisite for this study. I did not screen applicants for degrees of formal musical training as this was of no real bearing to my investigation; as it turned out the participants had little or no formal training.
Statement of the Research Question

This study asks:

When children compose music in an electronic environment, what are the processes they use, what does the environment contribute and what conclusions can be drawn about children’s musical understanding and development?

Thesis Overview

In Chapter 2, I present a review of literature that addresses the issues implicit in my research question. Much of that literature is from the field of music education research. In researching that literature I was struck by the very narrow range it encompasses historically. The range encompassed within that body of work that deals with composition is narrower still. It worries me that much of our contemporary understanding of the way children interact with music is based on a narrow body of knowledge that has its roots so deeply buried in a psychological sciences tradition; creating artificial environments in which children were placed like so many laboratory mice and told to compose does not sit comfortably with my own experience of composition-based music education. That is not to say that all the literature adopts this approach but it runs rich through the veins of the literature. I, too, am guilty of reporting it and by citing it adding to its value. There are, of course, many researchers who have endeavoured to investigate what children do from very different perspectives.

Chapter 3 presents my methodological approaches and methods. It also introduces the participants and my approaches as their teacher. The data collection process occupied the best part of a school year and required me to go to the school in question to run weekly sessions of approximately 50 minutes in length with the three girls and four boys who were my participants. Over the 24 weeks of sessions (allowing for interruptions of school holidays and school camp, 24 weeks was in fact from March 2nd to November 9th) I collected 261 composition files. Many of these files were versions of the same composition as it progressed; some were individual compositions.
that were not part of a series. From those 261 files I have ended up with a ‘reduced’ list of 106 compositions. Throughout this entire work I present 56 of these compositions for discussion and analysis. The students chose to work individually or collaboratively throughout the study but I made no attempt to enforce a collaborative structure; the children chose how they wanted to work. Chapter 3 also serves to set the scene for the following chapters. It introduces ideas of hermeneutics, narrative and, amongst other things, the foundation of naturalistic inquiry that guides and informs the whole work.

In Chapter 4 I present a case study that details the events of the study and the children’s narrative account by presenting individual stories of each child. It is in this chapter that I investigate some of the affordances of the environment and allow the children, in their own words, to present their own understandings of their compositions, of music and of their approaches to music making.

In Chapters 5 and 6 I present the compositions themselves. I do this in two very different ways. They are presented in Chapter 5 as part of a developing typology of musical approaches based on play. I use the word ‘developing’ because this is an inexact typology in that each composition could be typified in different ways and I do not believe that it is yet (or ever could be) definitive or exhaustive. Within that ‘developing’ typology, however, the one thing that I am certain of is the centrality of play. This typology allows me to discuss and analyse the compositions in ways that are new and completely relevant to how they were composed. The typology is significantly important to the current study because it is a direct response to the many different ways the children related to the electronic environment. It presents musical compositions that were created not for how they sounded but for how they looked. It presents musical compositions that were created as an affordance of the environment and it attempts to legitimise the activity of play as a significant function in the compositional processes of the children in the study.

I present the compositions, in Chapter 6, through the identification of significant compositional features. These features were discovered because of the environment and can be presented because of it. This chapter discusses and analyses children’s musical compositions in ways that I have not yet seen in the literature. It is an
acknowledgement of the very different ways in which they relate to music and to their musical preference, hearing and understanding.

The concluding chapter attempts to make sense of everything that occurred. One of the approaches I use to provide that context is to revisit the work of Swanwick and Tillman through the recent work of Keith Swanwick. His revisiting of their Sequence of Musical Development is timely for me and provides a highly appropriate context given my desire at the commencement of this study to question the relevance of that significant piece of research, it also allows me to come, as it were, full circle (yet another appropriate hermeneutical concept) to re-introduce the work of the children in the current study against Swanwick’s re-introduced ideas. In Chapter 7 I also re-examine notions of metaphor: the metaphor of language, the metaphor of music and, of course, the metaphor of play. Through this re-examination I draw conclusions about the world of childhood and the importance of the acknowledgement of that world.

**Limitations of this Study**

This study is the work of a single researcher working in a single classroom with seven children. It is bounded by its design and limited by it. It does not seek to present anything more than the experience of the individuals that were part of it, including the researcher. I believe that the methodological framework that I apply in Chapter 3 presents a picture of this research as valid and robust. It is not generalisable in the sense that I do not attempt, or wish to attempt, to claim that what I have found applies to any situation other than the one that was investigated. Yet I believe that what I present in this work is of significant importance to our understandings of the ways children perceive, hear, think and act musically.

The research question deals specifically with the investigation of the compositions and compositional processes of children in an electronic environment. The electronic environment that I chose to work with focused on the use of two software applications, Cakewalk Home Studio (Cakewalk, 2004) and Audacity (Audacity, 2003). The programs were introduced and used in ways that were not instructional but experimental. Had a different approach been used it is very likely that different results
would have emerged. Likewise I tried not to impose or enforce specific musical outcomes. Had outcomes that mandated form and structure been sought, the results would also have been different. To me this is one of the strengths of this research. It was research that allowed children to play and experiment and acknowledged the importance of that play and experimentation.

This study has taken a period of eight years; the data were collected in 2004. I do not think that in this case this is necessarily a limitation because I have become very familiar with it in that time. I have become very close to it, which is very appropriate in a hermeneutical sense since hermeneutics is about being close to the thing that you are trying to interpret.

One significant limitation (or perhaps failing) of this study is that it is presented on paper. It is a work about sound and action. The compositions of these children deserve to be heard and they need to be heard as the reader is reading. If I were allowed to submit this work electronically there would be a hyperlink here (it’s annoying that you can’t press it, isn’t it) to a sound file of some remarkable piano playing; of some remarkable composing. I am reduced to inserting still pictures and adult transcriptions of what should never be transcribed.
Chapter 2

Literature

I asked the zebra
Are you black with white stripes?
or white with black stripes?
and the zebra asked me,
Is a sandwich bread with filling in it?
or filling with bread around it?
Is the sky blue with cloudy patches?
or is it cloudy with blue patches?
Is a circle a ring with space in it?
or is it space with a ring around it?
Is a tiger brown with yellow stripes?
or is it yellow with brown stripes?
And on and on and on and on, and on he went.
I'll never ask a zebra about stripes
Again
(Narayanan, 2008, after Silverstein (1981))

Introduction

This chapter presents a deliberately judicious review of literature concerned with the main parts of the research question; the compositions, the process of composition, the environment, and most importantly, the children. It serves to present historical approaches to research about children’s musical composition and about music education. It also serves to present a context for the theoretical frameworks used in this study and to support the developing theories that emerged from the data. It also presents theories and practices that have informed educational computing over the last three decades. Rather than trying to present as much as I can about one area I have focused this review into the areas that fit the question. Central to what I am looking at here is the place of children and their compositions. Figure 2.1 presents a model of the structure of this chapter. It places children’s compositions in the centre, around that
area sit sub categories that are dealt with in relation to children’s compositions. The outside circle houses the underlying threads to this whole work: ICT, Play and Affordance

![Diagram]

**Figure 2.1: Model of Literature Review Structure**

While the research question asks about children’s compositions it also asks about the process of composition and the environment in which these compositions were created. It is this question about environment that moves this study away from being a study only about music, for the process of composition in this project is not and cannot be seen as an act isolated from the computer and the electronic environment. In order to investigate the role of the computer in the compositional process it is necessary to do so using a perspective that presents contemporary understandings about the role of the computer in modern life. Accordingly, this chapter also presents ideas about the relationship the children had (and have) with the computer, and the
computer environment. The compositions and the processes occurred, and the environment was created in a music education setting, thus this chapter must also focus on literature based on music education research.

It is my belief, and one that is supported through my research, that the relationship between child and computer cannot be separated from the music or the musical process. It cannot be separated from any discussion about musical development and it cannot be separated from any search for new understandings about the compositional process, about children’s compositions and about children’s learning. I further propose that this relationship transcends music or art, or any specific discipline, and becomes central to our understandings of the way children in the 21st Century communicate, understand, interact and are educated. Thus it becomes essential that this relationship is discussed in this chapter. I also believe, through my observations and analysis of data, that the role of play in both the compositions and the compositional processes was significant. Accordingly, consideration will be given to the area of play as well.

**Composition and Compositional Processes**

Growing from the work of Paynter and Aston (1970) who advocated a creative, child-centred approach to music education, and the Manhattanville Music Curriculum Program (MMCP, 1970), which proposed a sequential music education program that was contextually relevant to students and immersed them in compositional and improvisational activities, composition is an essential component of music education. Composition is advocated at all levels, from the prep child shaking maracas to make the sound of the wind to the tertiary student writing a complex ensemble piece. Regardless of the philosophical perspective of what music, or music education is, writers and researchers agree on the importance of composition to the understanding of, and the true engagement with music. Reimer’s (1970, 1997) artistic approach, Elliot’s (1995) praxial approach and Swanwick’s (1999) metaphorical approach (drawn from Langer’s (1969) symbolic approach), differ on a philosophical basis, but all support composition as a key to musical understanding and as a foundation of music education.
This chapter is not a review of philosophies of music education nor is it within the scope of the current study to engage in such a review. I do find it interesting, however, that the existence of different philosophical approaches has not always been a harmonious one. I turn to John Dewey to provide a context. It is his view (Dewey, 1938) that new ideas often reject the old and are built from that rejection rather than from an integration or at least with regard for those aspects of the old that are valuable. The debates surrounding music philosophy and music education philosophy have been around for a very long time. Langer presents her ideas about symbolic transformation within a historical context. Her view is that music is expression, aesthetics and experience. Her ideas appear to have had a significant impact on more recent music theorists and thinkers. Swanwick (1999) begins with a discussion of the importance of Langer to the development of his own understandings of music and music education (Gardner (1982) dedicates a whole chapter to her). Elliott (1995) cites Langer as well but is critical of her aesthetic approach and more specifically is critical of Swanwick’s. A public debate ensued with both Elliott and Swanwick attacking each other and each other’s theories; perhaps Dewey was right.

Many researchers have studied children’s compositions (Bamberger, 1991; Kennedy, 2002; Kratus, 2001; K. Swanwick, 1988, 1989; K. Swanwick & Tillman, 1986). Their studies have focused, reasonably enough, on composition as a musical activity and on the implications for music education. More detailed discussion of these and other authors occurs later in this chapter. There is also an underlying approach to the study of composition stemming from Wallas (1926), through Torrance (1963), Guilford (1967) and Webster (1979) to Kratus (1989, 2001) that looks at the process of composition as a series of steps, or as in the case of Kratus (1994b, 2001) three processes (exploration, development and repetition), that composers take leading up to the final product. This approach attempts to align children’s compositional processes and compositions to those of adults. It also seeks to inform music educators about ways of teaching composition. Accordingly, the whole thrust of much previous compositional research has been about teaching composition and teaching music.

Recently, some researchers have begun to investigate composition in a different light. Gall and Breeze (2005) argue that we need to reassess our understandings of children’s compositions, especially in a computer environment. They share my view
that much research has focused on products of composition. They draw on the theoretical frameworks of multimodality (Kress, 2000) and affordance (Gibson, 1979). Through this approach they wish to “expand our understanding of the changing music composition landscape” (p. 416). I argue, both in this chapter, throughout this dissertation and elsewhere (Reynolds, 2006, 2008a) that by using an ecological approach (Gibson, 1979; Windsor, 2004) it is possible and appropriate to situate children’s compositions relationally within the world of childhood.

Barrett (2003) regards children’s music making in a different light again. She suggests that we need to move away from the view that children’s music making is really only a moving toward adult music making, toward an understanding that children’s music making is in fact more of a “musical narrative … through which they symbolise their feelings and articulate their understandings of their encounters with their worlds” (p. 201). Barrett’s words and her approach to understanding children’s compositions and creative processes echo those of Bissex (in Upitis, 1991) who saw the study of children’s composition as a means of “giving access to the many languages of the human mind” (p. ix). This is an important move from traditional approaches to music research and one that helps frame this study.

The adult approach to understanding children’s music making described by Barrett (2003) is compounded by the not surprising but significant focus by Western researchers to attach Western traditional understandings and values to children’s musical compositions. The following section presents some of that research in an attempt to highlight the approaches used; it is in no way intended as a criticism of the research.

Kratus (1989) investigated children’s compositional processes by timing responses to a compositional problem. He sought to investigate approaches to compositional stages as described originally by Wallas (Wallas, 1926) as: preparation, incubation, illumination and verification. Kratus sat children in a quiet room and instructed them to

… make up a song on the little piano. Your song will be a brand-new song, one that no one has ever heard before. You may use any white keys you wish, but your song should begin on
the key marked with an "X" [middle C]. You will have 10 minutes to make up your song, and I will ask you to play your song two times for the tape recorder. Be sure you can remember your song, so that you can play it the same way two times (p. 9).

The resultant compositions were then analysed by judges who were “pursuing graduate degrees in music education and were … excellent musicians” (p. 10). His findings (presented very briefly here) were that the older children (9 and 11 years old) composed in similar ways to adults and that the younger children (7 years old) improvised. Kratus duplicated this research (2001) using soprano xylophones. His instructions to his subjects were identical except that they were instructed to start on the note ‘D’ and that after the first note they could play whatever they liked. The main difference in this study was that the xylophones were configured differently; xylophone bars (notes) placed in different tonal arrangements, each consisting of five or ten notes. His findings from this research indicated that given more note options, children composed longer pieces, employed more exploration than children with fewer note options but couldn’t remember their compositions as well.

The presentation of this research here is significant for four reasons. First, Kratus’s 1989 study appears consistently throughout the literature. This work and subsequent work by Kratus appear as a foundation for recent understandings of and approaches to children’s compositions and music education. Second, Kratus’s stated purpose for these studies is to inform music educators about how to teach composition. Third, the approach to composition and the language of analysis in both is adult and western. Kratus’s work has become a framework for much music education research. The emphasis on specific and explicit components of music and how composition can effectively be taught underpins his work. Fourth, the approach adopted by Kratus and subsequent researchers could not be further from my approaches in the current study, nor could the aims.

Building on Webster and Kratus, Wilson and Wales (1995) examined “the nature of the melodic and rhythmic representations of music in children aged 7 and 9 years” (p. 96). They too tested children individually in a quiet room. Children were required to compose music using a computer. Notes were added through the use of a mouse. The stave was represented on a computer screen as being in the key of C major and with
the time signature of 4/4. The resultant compositions were analysed according to their complexity using a children’s drawing classification system developed by Willats (1977) who likens the acquisition of drawing to that of language. The use of Willats is of interest in that he suggests that the developmental process in drawing is very much to do with a self realisation of drawbacks and limitations rather than through explicit teaching. Wilson and Wales further classified according to melodic structure and rhythmic structure into three stages of development for each skill. Their findings showed that the stages of musical development could be attributed to age. They also attempted to create a link between levels of private music training and stages of musical development. They noted that this appeared to be only noticeable in rhythmic development.

I present the Wilson and Wales study as a continuation of music research in the psychological tradition using quantitative measures based on adult, Western understandings and structures of music. I suggest that in the Wilson and Wales study and in those by Kratus the setting was clinical and far removed from the reality of classroom practice.

Another significant and oft quoted work is that by Swanwick and Tillman (1986). They examined the 745 compositions of children aged between three and fifteen years old, and drawing from the work of Piaget (1951) and Bruner (1966), and from the musical research of Moog (1976), Loane (1984) and others, they proposed a sequence of musical development. A rationale for the development of such a conceptual framework is that “without such a framework, any account of musical development in children would simply be descriptive, lacking in interpretive power and the ability to relate the music of children to the music of others” (K. Swanwick & Tillman, 1986, p. 306).

The Swanwick and Tillman sequence of development bases itself firstly on the Piagetian concepts of mastery, imitation and imaginative play; a fourth concept, metacognition, is added. Placing these concepts in a framework of play, Swanwick and Tillman identify a relationship between “the concepts of mastery, imitation and imaginative play, and the analogous musical play elements; control of sound, expressive character and structure” (1986, p. 309). The Swanwick and Tillman
sequence (see Figure 2.2) is represented as a spiral: the eight developmental modes or transformations occurring around a musical basis of materials, expression, form, and value. On the left of the spiral are the stages of mastery, imitation, imaginative play, and meta-cognition, on the right are the age ranges for each developmental stage.

![Figure 2.2: The Swanwick and Tillman (1986) sequence of musical development](image)

The Swanwick and Tillman study presents a significantly different approach from the work of Kratus. In the first instance this work replicated typical classroom music activities, rather than separate clinical experiments. The activities the participants were asked to do were typical of the activities they would expect to do in their normal music classes. Further, Swanwick and Tillman’s contextual definition of composition that mandates “freedom to choose the ordering of music, without notational or other forms of detailed performance instruction” (p. 311) differs significantly from the restrictions placed on participants in the Kratus studies and that of Wilson and Wales
Having said that, it is interesting to note that the Swanwick and Tillman ‘freedom’ was not without its restrictions; children’s choices of instrument were limited and within the ten musical opportunities offered to children some consisted of restricted note choices.

Despite the differences between the Swanwick and Tillman, and the Kratus studies, Barrett (1996) argues that the two studies have significantly similar outcomes; that children under the age of nine years do not normally compose with form or structure. Barrett disputes this finding through her own research into 137 compositions of children aged between six and twelve. Given the task of composing a piece with a beginning, middle and an end, the children in her study succeeded. The purpose of Barrett’s study was to investigate the aesthetic decision-making of children rather than to identify compositional styles or stages; accordingly it presents a very different approach to compositional research to those described already.

The purpose of the Swanwick and Tillman research, like that of Kratus and others is to inform music educators and to develop music curriculum that includes opportunities for composition and acknowledges that children will compose differently at different ages. This is admirable and, especially when viewed historically, appropriate. For me, however, and within the context of my research these researchers are applying expectations about and understandings of music and music education as a method of teaching music that differ from the purposes of the current study.

Despite supporting the work of Swanwick and Tillman, Davidson and Scripp note a “lack of consensus … about what musical development might be” (1989 p.59). This is not a dismissal of music development theories; it is an attempt to look at musical development through a number of different criteria, as a whole.

A further significant departure from the approaches of Kratus (although Kratus is cited and developed) is that of Folkestad, Hargreaves and Lindstrom (1998). In their study the context is computer based composition. They analysed 129 pieces of music from 14 participants over a three-year period. Through that analysis “qualitatively different ways of creating music” (p. 87) were identified. Subsequently, a typology of
compositional styles was described. The two distinct modes of the typology, Horizontal and Vertical, refer to the strategies of composing, not to the compositions themselves. The typology is important to the current study in that it, and subsequent work by Nilsson (2003) and Nilsson and Folkestad (2005), provide a basis for my own typology of compositional styles based on play which is presented in Chapter 5. Accordingly it is summarised below:

**Horizontal Composition**

A first phase of Horizontal composition is the completion of the piece from beginning to end, either using a keyboard only (Horizontal 1) or using a computer (Horizontal 2). From there, the computer is used for arrangement and instrumentation. A basic feature is that composition and arrangement are separate processes. Horizontal composition employs a repeated Playing, Listening, Evaluating process.

**Horizontal 1A: Composing at an instrument – arranging at the computer**

- Composition recorded on one track
- Piece learned by heart
- Computer used as a tape recorder to document complete piece
- Mistakes in recording usually mean rerecording the whole piece
- Typically based on melody and harmony rather than rhythm
- Presupposition of sufficient instrumental skill to enable realisation of musical ideas

**Horizontal 1B: Composing at an acoustic instrument using the computer as co-musician**

- Composition completed on an instrument (guitar)
- Computer used to test compositional ideas – harmonies, rhythm – after they have been written on the guitar
- Computer used to play along – allowing testing of ideas.
- All components built by playing along with the computer on an acoustic instrument
- Original instrument not replaced by computer
Horizontal 2: Composing element by element in front of the computer

- Computer utilised from the beginning
- Composition is done by trying things out element by element
- Once composition is complete arrangement takes place

Vertical Composition

Each section of the composition is completed for all instruments before moving to the next section. The composition and the compositional strategy take the form of vertical chunks.

Vertical 1A: Composition section by section

- The computer is used during the entire composition process
- Instrumentation structure not defined before work begins

Vertical 1B: Composition as sound composition (soundscape)

The sounds and the created sound structures have a central function to the composition

- Time based concepts and rhythmic structure dissolved

Vertical 2: Composition after defining the orchestra

- Originates from a tonal and stylistic picture of what the finished composition will sound like
- The equipment provides the basis for the method of working

The most significant departure from the Kratus approach in the Folkestad et al. study is that instead of informing music educators how to teach composition the recommendation is that schools “should not teach the method of composition, but
rather create a context in which pupils can explore their ways into musical creation” (Folkestad et al., 1998, p. 95, original emphasis).

Continuing with Folkestad’s earlier work on describing compositional approaches, Nilsson (2003) and Nilsson and Folkestad (2005) describe a two-year study of 8 year old children composing in electronic environments. The study was designed to clarify the creative process within these environments. Nilsson and Folkestad identified five compositional variations, concluding that the first four “could all be described as different forms of play, where the suggestion to compose music was perceived as an invitation to play and make music” (p. 34). They go on to link the first four variations to Csikszentmihalyi’s (1990, p. 125) characteristics of ‘flow’. This idea of play will be explored in more detail later in this chapter. Interestingly, Nilsson and Folkestad found that the fifth variation, in which the task is placed in the foreground of activity, an invitation to create, was seen “mainly as a school task … taking place outside the frame of play” (2005, p. 34). The five variations are as follows:

• Putting the synthesiser and computer in the foreground of the activity
• Using creative music making as a means to express personal fantasies and emotions
• Putting the playing of the instrument in the foreground of the activity
• Placing the music itself in the foreground of the activity

I present a more detailed investigation of these variations as part of my own typology in Chapter 5.

While the present study is an investigation of composition and music it seeks to look at composition in a different way, to look at it as a non discipline-specific human activity. At no point does this project seek to diminish the musical relevance or importance, rather to look at a musical experience in broader terms as a human experience. This idea is supported by Swanwick (1988) who believes that “the most direct and uncomplicated way of extending developmental studies into school age is
to observe the musical compositions of children, just as studies of language development concentrate on what children actually say or write” (p. 60).

Music Education

It is apparent that much music education revolves around the development of musical skills; listening, instrumental, choral theoretical or compositional and so on. This is, of course, to be expected and is formalised in curriculum approaches in the UK and the USA in particular. Specialised study of music runs parallel to current Australian curriculum practices, especially in Victoria where specialised Western Art Music approaches do not specifically underpin school based music education until the final two years of schooling. Individual schools take their own approaches often revolving around band, ensemble and/or orchestral music programs, or strong choral programs that exist outside the curriculum. In Victorian primary schools the music curriculum is part of an overarching Arts framework that does not prescribe specific musical skills outcomes. Music education research, however, often focuses on the development of skills and attributes that are specifically aligned with Western Art Music beliefs and traditions.

In a recent review of her own work and of education research processes and beliefs Bamberger (2006) discusses developmental approaches to education research that, in her view, align development with a narrow view of progress that is measured by a development of musical elements (she provides the examples of pitch, duration and interval) in children and their capacities to work with those elements. This results in attention being given by music educators to what she calls “musical literacy” saying that;

It is at least tacitly assumed that that through learning to recognise and produce a notated pitch and to name it as it occurs, the child will learn to overcome earlier responsiveness to the continuous fluctuation in the properties of objects according to the change of situation (p. 71).

According to Bamberger this attraction to musical literacy has led to a “privileged status” being given to “symbolic notations and the theoretic categories associated with their domains” (p. 71). This status exists across art disciplines and has in turn led to an emphasis on systems of approach that are incomplete and that minimise the
importance of other aspects of the discipline. Her concern is that by awarding such status to the symbol system (in this case notation) educators have created an environment in which these privileged things can be seen as the “only things, the only objects that exist in the domain”. This then leads to what she refers to as “ontological imperialism” (p. 71).

Dogani (2004) studied six primary school music teachers in their approach to teaching composition. Interestingly, from the point of view of this study, she identified an overall characteristic teaching practice that teachers adopted in their approach to composition teaching. This practice was a structured approach that included skills teaching, ‘extra-musical’ themes to work from, small group experimentation, more teacher talk than music making, strong teacher direction, teacher ownership (despite some deference to student wishes) of the product. She states that “they interpreted ‘creativity’ to mean composition as an essentially technical-rational procedure built upon a firm structural framework” (p. 266). This example is used to highlight both the way teachers approach primary music education and the approach researchers take to music education research.

The current study is an investigation of children’s compositions and the role the environment plays in the compositional process. It proposes new ways of analysing these compositions within that computer environment. Thus, it is necessary to investigate the literature that deals with the use of technology in music education and research.

Technology and Computers in Music and Music Education

The literature on the area of music and technology has not proved enlightening for this study. Much has been written about what the technology is but little on what the technology means in terms of rich or different experiences for children. My own work (Reynolds, 2001, 2002, 2003) based on previous research presents a different approach, one that looks at the computer as something that allows the child to do something that could not be done without it. The approach draws heavily on the work of Papert (1980) and McDougall (1990). Published work from the current study (Reynolds, 2005, 2006, 2008a, 2008b, 2009) presents views about how the computer
allows us to investigate children’s compositions and, perhaps more importantly, how it allows us to investigate and develop our own understandings about children’s musical perceptions and understanding. A significant contributor to the development of our understanding is the fact that the computer allows us into the process of composition in ways that have never before been possible. This approach is not developmental, yet provides opportunities to look at musical development in different ways.

The notion of the computer as a tool for analysis is raised by Webster and Hickey (2006). This notion is not explored in depth by them and their focus on musical development narrows the way they look at the role of computers in music and music education. They see computers and technology mainly from a perspective of computer-aided instruction (CAI) in what could be seen as a very narrow use of that term. Their review of literature is one that is drawn mostly from old sources that describe the uses of computers in the teaching of music. Their understanding of CAI fits with Papert’s (1980, 1993b) less than flattering description made in the early 1980s where CAI “means making the computer teach the child” (1980, p. 5). Papert’s ideal is that the role of the computer is to be a “carrier of cultural ‘germs’ or ‘seeds’ whose intellectual products will not need technological support once they take root in an actively growing mind” (p. 9).

Webster and Hickey categorise software titles into music content by age group. Interestingly, they place Audacity, one of the programs used in this study, into their ‘perception’ category for 10-15 year olds, where it can be used to develop musical perception by playing teacher recorded examples of typical musical elements. In their ‘creating’ category for that age group they only list looping type titles such as GarageBand (a multitrack midi and audio program for Mac computers that can operate through a process of dragging and dropping pre-recorded clips onto a timeline) and Acid Studio (another multitrack midi and audio program that is typically used by dragging pre-recorded clips onto a timeline and ‘looping’ them). Looping software typically constrains the user into a rigid four beats to the bar framework and relies on the piling up of short melodic phrases that align themselves tonally and rhythmically to the timeline. Webster and Hickey place programs that are equivalent
to Cakewalk, the other program used in this study, into the ‘creating’ category for the 16-adult age group.

From a developmental music education perspective this categorisation makes sense but it doesn’t fit with ideas about the use of computers as the ‘knowledge machines’ that Papert (1993a) proposed many years ago, or with my approaches to the use of computers in children’s music making. The developmental approach adopted by Webster and Hickey also places them at odds with Papert’s ideals. In the opening sections of his book, Mindstorms, Papert (1980) describes the book’s purpose (and his beliefs about computers in education) as follows:

This book is about how computers can be carriers of powerful ideas and of the seeds of cultural change, how they can help people form new relationships with knowledge that cut across the traditional lines separating humanities from sciences and knowledge of the self from both of these. It is about using computers to challenge current beliefs about who can understand what and at what age. It is about using computers to question standard assumptions in developmental psychology and in the psychology of aptitudes and attitudes (pp. 4-5).

These ideas resonate very strongly with the approach that I have taken in this study and are presented here to demonstrate the significantly different approaches to and understanding of the use of computers by educators in all areas of education.

Webster and Hickey see the instant music making capacities of programs like GarageBand, Acid Studio and Sooper Dooper Music Looper (a junior and more constrained version of Acid that is designed specifically for primary aged children) as being potentially beneficial in developing musical perception, but argue that their use “needs to be tempered with expert teaching [that can] help challenge students to develop more sensitive and complex ways to think musically” (2006, p. 386). They also call for more research into how these technologies “can be done well or in a way consistent with current theories” (p. 386).

I challenge the notion that children don’t already think in musically complex or sensitive ways. It is just that these complex and sensitive musical ways of thinking don’t necessarily fit with developmental approaches, with accepted musical thinking or with educational outcomes. More importantly, the call to link technology use to
existing theories demonstrates a certain caution and traditional approach to research and to technology. While not discarding the existing theories, and acknowledging their importance, I believe that new technologies allow for new investigations and understandings as well as the development of new theories. My work is an example of a new approach leading to new theories and pedagogies.

In a later chapter on computers and technology Webster (2007) focuses on presenting a recent historical perspective, supported by older research. The chapter is disappointing for me with regard to my own study since it offers no new ideas about the use of computers in understanding children’s engagements with music or their own musical understandings. Despite the title including ‘learning’ the chapter is really a focus on ‘teaching’ with technology. It is in many ways a restating of his and Hickey’s earlier work.

Webster’s investigation of computer technology to support composition is, as is much of the literature, either based on young adult musicians composing or children being given ‘special’ software that composes for them. Nothing could be further from the investigations and design of my study.

As indicated by the Webster and Hickey, and the Webster chapters much of the literature around the use of computers in music education is about the computer as teacher. The examples I provide in Chapter 6 (and in Reynolds, 2009) in my discussion of the ways children’s music making is represented in the literature demonstrate the pervasiveness of that approach in the literature.

Folkestad et al., (1990; 1998), Nilsson (2003), and Nilsson and Folkestad (2005) have provided valuable studies on the use of technology in children’s and young people’s compositional approaches. Their studies (referred to in part earlier in this chapter) focused on the role of the computer and peripheral hardware and software in the compositional processes of young people. The Folkestad studies investigated adolescent children, and the Nilsson studies younger children. The role of the computer in these studies was not that of teacher or instructor but one of participant in the creative and compositional processes of young people.
**Play**

As indicated earlier in this chapter and developed in Chapters 5 and 7 in particular, the role of play can not be separated from the process of composition, nor should it be separated from the interactions children have with their environment and the task at hand. The research question for the present study does not ask about play, but it became apparent that play was an essential and intrinsic component of everything that happened in this study. Accordingly, I present my understanding of play and my interpretations of the play literature in the following section.

When I realised the importance and centrality of play to everything the children did I began an investigation of the play literature in order to provide a theoretical basis for my assumptions. To my horror but not really to my surprise I found this body of knowledge to be massive, heavy and full of contradiction. There is confusion and debate about the differences and similarities between play and games, between games and gaming, between infant play and child play, between child play and adult play, about the nature of play as symbolic, sensorimotor, conceptual, or imagined, or about play as mimicry and as training. The debate rages over quantifying the nature and types of play against the individual human experience of play. Does play define culture or does culture define play? The main point of agreement is that it is a significantly important human activity. It is an activity of freedom and it is an activity that is enjoyable.

I cannot hope to present the play debate here, nor should I attempt to, and as I read I am reminded that the more I read, the less I know. I begin the following section with Huizinga (1968), who despite the criticisms that I have read about him by Sutton-Smith and others (Herron & Sutton-Smith, 1971) presents what to me is as close to my own belief: that play is fun and that it is total. This is an excellent starting point for me, and one that fits closely to my own observations and analysis.

In his foreword to *Homo Ludens*, Huizinga (1968) says “… the conviction has grown upon me that civilization arises and unfolds in and as play”. He sees play not as a “biological phenomenon but as a cultural phenomenon” (p. 2).
He then attacks attempts to describe play as a biological function.

All these hypotheses have one thing in common: they all start from the assumption that play must serve something which is not play, that it must have some kind of biological purpose. They all enquire into the why and wherefore of play (p. 2).

He says that these attempts are made through a failure to address the “totality” of play; “… what play is in itself and what it means for the player. They attack play direct with the quantitative methods of experimental science without first paying attention to its profoundly aesthetic quality” (p. 2).

For Huizinga, the single most important aspect of play, its defining characteristic, is that play is fun. This fun element, according to Huizinga cannot be analysed, nor is there any “logical interpretation” (p. 3) of it. In his own play on words Huizinga says that an acknowledgement of play is an acknowledgement of mind, “for whatever else play is, it is not matter” (p. 3). Play is, for Huizinga, a significant form of human activity that in all its forms (ensuring that it is, of course, fun) is socially constructed. To emphasise this point he uses the example of language:

that first and supreme instrument which man shapes in order to communicate, to teach, to command … Behind every abstract expression there lie the boldest of metaphors, and every metaphor is a play upon words. Thus in giving expression to life man creates a second, poetic world alongside the world of nature (p. 4).

This notion of language as play and as metaphor fits with discussion in Chapter 3 about Ricoeur’s (1991) ideas of text as action, or in this case a metaphor of action. It also fits with discussion in this chapter and in the concluding chapter of this work about music as metaphor and about the ideas of Moustakas (1981) about the use of language to mediate language and the failure of metaphor to allow for the creation of meaning without context.

In his discussion about play as fun, Huizinga presents historical and linguistic interpretations of what fun has meant. He talks about how play has been connected to folly and the comic. To Huizinga these are not play, these are representations of
human action, in the same sense that farce is. Play might contain elements of folly and
the comic but “all play is a voluntary activity. Play to order is no longer play; it could
at best be but a forcible imitation of it. By this quality of freedom alone, play marks
itself off from the course of the natural process” (p. 7). Children don’t play out of
instinct, without choice. They “play because they enjoy playing, and therein precisely
lies their freedom” (p. 8). This last point is at odds with but also in agreement with
(depending on interpretation) one made by Sutton-Smith (2001) that “we don’t know
why children play, even if they can’t help doing it” (p. 39).

Thus play is seen not as a learning process but something that exists as itself, any
learning that occurs through play is incidental; not the reason for the play. The play of
children is an essential component of childhood, in the current study it was also an
essential part of the children’s experience of the study. It also provided them with
opportunities to explore, discover and pretend. As will be discussed later in this work,
in particular in Chapter 5, the play of the children was a significant part of the
learning environment but the play itself did not happen in order for learning to take
place; it was not deliberate, nor was it a form of skills practice.

Langer (1969) also argues against the notion of play as being a learning process. She
believes that when children represent observed actions in their play it is not for the
purpose of learning or mimicking, and that a represented action can become an “act of
reference rather than an act of representation” (p. 156). For Langer, when imitation or
mimicry is used by children it is not a learning activity. “It is an abbreviated,
schematised form of an action” (p. 156). She refers to Dewey and says that he has
been ‘misled … to believe that rites are simply a repetition of a practical behaviour for
the fun of the action itself” (p. 156).

I think her use of ‘fun’ here is interesting when thinking of Huizenga, who uses the
same word. Langer appears to be saying that play is fun and that because mimicry is a
form of play people have been led to believe that rites are an extension to mimicry.
She also talks about adult concerns that play is counter productive, something that
children do not worry about:
Only people who feel that play displaces something more vital can disapprove of it; otherwise, if the bare necessities were taken care of, work itself could command no respect, and we would play with all the freedom in the world, if practical work and sheer enjoyment were our only alternatives (p. 158).

Dewey (1980) had his own views on play that have had an important role in defining much of the play debate. He says that even though children’s play is often described as make-believe, those children “are at least engaged in actions that give their imagery an outward manifestation; in their play, idea and act are completely fused” (p. 278). This fusing of idea and act is supported by Huizinga’s idea that play is something beyond dualism. Huizinga (1968) says that play “lies outside the antitheses of wisdom and folly, and equally outside those of truth and falsehood, good and evil. Although it is a non-material activity it has no moral function. The valuations of vice and virtue do not apply here” (p. 6).

Not surprisingly, Dewey places an emphasis on the role of experience in play. He believes that play matures as the child matures and is informed by his or her experience, and that the content of that maturing play “consists of a mediation of present materials by ideas drawn from past experience” (p. 278). Although this might appear to contradict Huizinga’s idea of play as social construction and as something beyond dualism in that play, it actually resonates in many respects; it certainly has relevance to my study as the children are at all times mediating materials with past experience. They are also, ecologically, mediating their environment.

Dewey is another who talks about the freedom of play and in doing so can be aligned with both Huizinga and Langer on that point, if not on all others. For Dewey, “play remains as an attitude of freedom from subordination to an end imposed by external necessity” (p. 279).

Caillois (1961) supports Huizinga’s notion of play as linked to culture and as a free activity but says that Huizinga’s definition of play is “at the same time, too broad and too narrow” (p. 4). While supporting Huizinga at one level, Caillois believes that Huizinga was remiss by not investigating games. Caillois’s typology of play includes the playing of games. This approach to game play is an approach typical in the
literature of play and one that is not really appropriate to my study or my understanding of what the children were doing. The link that Caillois makes between play and games does little to provide a deeper understanding of what the children in my study were doing and why I think it is so important.

Caillois’s (1961) focus on play as games does allow for mimicry and for freedom but his analysis is really more adult focused. He notes that children mimic adults and that this mimicry can also include the mimicry of games. Caillois sees the mimicry aspect of play as something of greater significance than do Dewey, Langer and Huizinga. There is some connection here to my discussion about Vygotsky (Reynolds, 2005) and the idea that children play at an understanding of a character or situation. Vygotsky’s (1978) example is of two sisters playing at being two sisters. My extension of this idea is of children playing at being composers: playing at being recording artists, musicians and songwriters. These examples could be seen as examples of mimicry but I do not think they are, certainly not in the instance of children playing at being composers. In this study the notion of playing at composers is, in a sense, concentrated given the children did not know what composition was when they started. This lack of understanding about composition is discussed further in Chapter 4.

Sutton-Smith (2001) supports many of Huizinga’s ideas as well but believes that Huizinga has adopted a position that separates play from everyday existence; that it is about games for the game’s sake. He calls this the “aristocratic rhetoric of the late 19th Century” (p. 205). This is not the place to enter into the philosophical debate about play and I am not qualified to do so, but Huizinga’s ideas of the freedom of play, about the fun of play, and about it being a cultural phenomenon lend themselves well to childhood, and to the importance I place on childhood in this study.

Sutton-Smith’s thesis on the ambiguity of play is articulated early on in his book when he likens his approach to that of the monks in Umberto Eco’s novel, *The Name of the Rose* (1983). Sutton-Smith explains that these monks “who, having realised that it is impossible to say what God is, have devoted themselves to revealing what God is not” (2001, p. vii, original emphasis). They do this through nonsensical and playful representations; Sutton-Smith’s attempts to arrive at a meaning for play are presented
(according to Sutton-Smith) playfully and apparently nonsensically. His approach to play as being something ambiguous also appeals to me in the context of this study. His notion of explaining play by explaining what play is not is interesting in the context of Huizinga’s ideas (presented earlier in this chapter) about play being investigated as something that serves what play is not.

A level of ambiguity in his own definition of play is acknowledged by Bateson (1972); his definition begins: “These actions, in which we now engage, do not denote what would be denoted by those actions which these actions denote” (p. 180). He uses the example of a playful nip, it “denotes the bite, but it does not denote what would be denoted by the bite” (p. 180). Thus it is possible to extend this definition to include the actions of composition and performance demonstrated by the children in my study. Their actions denoted composition but their acts of composition and performance were playful and childlike; they do not denote composition and performance as we might understand it, or appreciate. They might be said to be (with apologies to Bateson) ‘playful nips’ of composition. This is particularly true when taking into consideration that the children were developing their own understandings of what composition actually was.

The difficult thing for me when engaging with the play literature is the seeming lack of credence given to play as a part of childhood, not play for play’s sake, or even playing for playing’s sake (the game for the game’s sake). Definitions and even Sutton-Smith’s ambiguity and ‘rhetorics’ of play lead to classifications and typologies of play as activities that, apart from some early childhood behaviours, are the same or very similar in children and in adults. The classifications, and Sutton-Smith is not very keen on many of them, are about playing, they are not about a way of life or a ‘world’ of childhood.

The difficulties that I have experienced in identifying appropriate definitions or identifications of play behaviour were also experienced by Marsh and Young (2006). They note that there is little research into children’s musical play when viewed in the context of both the broader play literature and the music research literature. It is their contention that children’s musical play is largely ignored for two reasons. First, that music education research is largely focused on product and skill development,
through attention on “adult-initiated activity in formal educational settings, rather than child-initiated activity” (Marsh & Young, 2006, p. 291). Second, that play researchers perceive music to be too specialised an area for study.

Marsh and Young’s research was focused on children’s musical play in their playground activities, yet their findings have a resonance with those of my own work (in particular relating to the complexity, sophistication and creativity of the musical activities) as described in later chapters. Of particular relevance to this chapter is their view that play has been trivialised in both research and education. That within the developed world the simple divisions made between work and play have resulted “in a view of play as a trivial, lightweight, random and somewhat useless activity” and their own belief that “to children, play is neither trivial or useless” (Marsh & Young, 2006, p. 289). Marsh (2008) extends this idea in her discussion about the ways that children’s musical play has been perceived and investigated. It is her belief that in addition to the trivialisation of play there has developed a belief that children’s musical play is simple. Her own research suggests otherwise and her concern is that this perception of the simplicity of children’s play has led to an overemphasis on simple musical materials in classroom music teaching. This has, according to Marsh, then “resulted in locally based conceptions of children’s musical play being generalised to a much larger educational context” (Marsh, 2008, p. 12).

Piaget (1971) is strong in his criticism of Sutton-Smith’s interpretation of his (Piaget’s) theories and says:

Play is an exercise of action schemes and therefore part of the cognitive component of conception. At the same time, however, play manifests the peculiarity of a primacy of assimilation over accommodation which permits it to transform reality in its own manner without submitting that transformation to the criterion of objective fact. Regardless of what Sutton-Smith says, play fits into this system without becoming subordinated to accommodate imitation. Imitation only plays the role of a symbolic instrument from the moment that sensorimotor play becomes symbolic (p. 338).

Of significant importance to my study is this idea of the primacy of assimilation over accommodation and the subsequent transformation that occurs within the specific reality of the child and the lack of need for objective fact. Assimilation is not
imitation in Piaget’s eyes, or does not have to be. The compositional play of the children in my study could be seen as a form of assimilation but only within the individual realities of the children; not as a means of achieving adult compositions according to adult rules.

Herron and Sutton-Smith (1971) describe two approaches to the study of play: one concerned with form, and the other with cause. They say that Huizinga was interested in form and accordingly described it. They argue that he is “reporting from a phenomenological stance – though there is no reason why such reports could not be made systematic and thus quantified” (p. 344). I am unsure if this is a criticism or just a statement. Given the theoretical framework of naturalistic inquiry that I describe in Chapter 3, a descriptive and phenomenological approach is valid and understandable. Herron and Sutton-Smith go on to describe how the majority of studies into play have focused on the causal. Again, it is not clear if this is critical of these approaches. What is clear is the importance Herron and Sutton-Smith attribute to the understanding of play. They conclude with the following:

The functional understanding of play is of great practical and contemporary importance. Its formal or expressive meaning may be of even greater long-term significance for understanding the commitment of children and adults to the existence within which they find themselves (p. 345).

**An Operational Definition of Play**

Defining play is extremely difficult and perhaps for the purposes of this study not relevant or even achievable. I am not sure that an adequate definition is possible or necessary. Sutton-Smith (2001) proposes a theory (and perhaps a definition) of play as a “model of adaptive variability” that evokes Darwin. Yet he also talks about how children’s own definitions of play “centre on having fun, being outdoors, being with friends, choosing freely, not working, pretending, enacting, fantasy and drama, and playing games” (p. 229). He says that the children’s rhetoric of play is similar to adults’ “about play as some kind of valuable personal experience” (p. 49). As mentioned earlier in this chapter, Sutton-Smith believes that children can’t help playing, that they really have no control over it. He also is of the opinion that “we
don’t know why children play” (p. 39). This notion of not knowing why is important to my study as I cannot and do not attempt to explain why the children are doing what they are doing. The idea that they can’t help it is also very important and helps frame my belief that the compositional play they engage in is very much part of the elusive world of childhood and of significant importance to this study.

I am struggling to identify, from the literature, the kinds of play demonstrated by my participants and what it means to this study. Be that as it may, I do not believe that this is a problem with my interpretation of events or of my approach to developing a typology of compositional styles based on play. Lincoln and Guba (1985) talk about an intuitive approach to data: thinking it’s right and acting on it. My intuitive approach is that these children were playing and they were playing with just about everything they did. Defining that kind of play has eluded me but that does not matter. What matters is that through my interaction with the participants and with the data I am in a position to say that it is the play that is important, and I really can’t find any better words than ‘mucking around’ to describe it.

For the purposes of this study and for my interpretations of the events and interactions, some kind of operational definition is appropriate. This definition also supports the notion of a typology of compositional approaches that is built on play that I present in Chapter 5. It is possible to investigate the play-based actions of the children in this study in many different ways, applying any number of theoretical approaches taken from the literature. An operational definition alleviates that need. The discussions from the literature that I find most appealing and relevant come from Vygotsky and from Huizinga. Both of these individuals receive considerable criticism for the lack of depth of their approaches. This is one of the reasons that I am attracted to them. A third discussion of play that is attractive to me (even though it evolves from Piaget) is that of Papert (1993b, 2005).

Vygotsky’s (1978) discussion of play involves how children ‘play at’ things. In my study I believe (and have written about (Reynolds, 2005)) the notion of the children playing at being composers, playing at being rock musicians and playing at having albums and songs. These were behaviours that were exhibited by the children in the study. I have already referred to them in this chapter and described them more detail.
in Chapters 5 and 7. Vygotsky also sees play in developmental terms in so much as it can create “a zone of proximal development in the child” (1978, p. 20). The connection between ZPD and play is one that is particularly appealing to me.

Papert’s (1993b) discussion of tinkering is very appropriate up to a point. The children did tinker with their compositions and with the software, but the purpose of their tinkering is not as clear as Papert’s stated understanding. In my interpretation of Papert tinkering is a means to an end, for the children in this study what they were doing was both means and end. I find it interesting that both Papert and Swanwick, who come from completely different disciplines and research areas, have built their theories on ideas that come directly from Piaget.

It is Huizinga who resonates most strongly for me. Not so much in his ideas about play defining culture (although perhaps it does define the culture of childhood), but his ideas of play as freedom, as fun and as a biological phenomenon. It is from him that I draw most strongly. My term ‘mucking around’ that I use earlier in this chapter is all about fun and freedom. It includes elements of tinkering and it includes elements of ‘playing at’, it quite possibly includes elements of whimsy (Jeanneret & Forrest, 2008). It captures the spirit of the events of the study as it captures the spirit and tone of the actual compositions. It is as much a part of the environment (electronic, imagined and physical) of the study (and the play that occurred within it) as it is a part of childhood. In this study the environment cannot be separated from what occurred within it, one of the affordances of that environment (or environments) was mucking around. Play and the environment cannot be seen separately; play is, using Gibson’s (1979) notion of affordance, both object and subject, and at the same time neither. The significance of the environment and the theoretical framework that contextualises that importance within this study is presented below.

**Theoretical Framework of an Ecological Perspective**

This study of children’s compositions and compositional processes uses Gibson’s (1979) idea of affordances as one of its bases for a theoretical framework. The
following section outlines Gibson’s approach to visual perception and draws on related literature that analyses Gibson’s theories and the philosophical debate about the ecological approach, and aligns his work to the area of ecological psychology and ecological semiotics. The section then demonstrates how Gibson’s ecological approach is a valid and appropriate framework for the understanding of the child-computer relationship. This section is not intended as a critique of Gibson nor is it intended as a deep analysis of his theory, rather its purpose is to outline the approach and subsequent developments to that approach, and to relate that to my study.

Gibson describes affordances as the perceived offerings of an environment to an organism, he describes affordances as referring “to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment” (p. 127). Hence a number of key elements of his work are introduced and, for the purposes of this study, require explanation and situation. Foremost amongst those are the notions of ‘affordances’, ‘complementarity’ and the object-subject (objective-subjective) relationship as presented in the ecological approach. Running through all of these notions, and essential to this study, is the notion of environment.

Gibson’s seminal work on visual perception proposes an approach to the understanding of the way organisms perceive their environments that is a move away from the scientific understandings of the mechanisms of the eye or on physical mechanisms that rely on standard measurement of an environment and a mechanistic approach to the way the environment is perceived. Gibson proposes that what an environment affords should be measured from the perspective of the organism. An example he uses is that of surface: If a surface within an environment “is nearly horizontal, nearly flat, sufficiently extended (relative to the size of the animal) and if its surface is rigid (relative to the weight of the animal), then the surface affords support” (p. 127). The key point here is the idea of relativity; the measurement for (or perception of) support can only be made relatively to the organism. The surface of water does not afford support for a human but it does afford support for many insects. In a similar way a seat (or the many surfaces that afford sitting) as perceived by an adult affords sitting, when perceived by a young child it may not. Accordingly, a cardboard box might afford sitting to a child but not to an adult (Heft, 1989). Of
course these are very simple examples but they are given here (as Gibson and Heft have given them) in order to situate the theory.

Sanders (1997) relates affordances to “opportunities for action” but links those opportunities to perceptions (or the activity of perception) that occur “in a world of significances-to-the-organism” (p. 107). He develops this idea with the example of a young child and an electron microscope. To a young child that microscope does not afford viewing cell structure, it might afford grasping (depending on its weight and the child’s size) and it might afford opportunities relative to the surrounding environment. As the child grows, however, the affordances of the microscope change. “Affordances that were available previously around the electron microscope no longer are. … Affordances that were not presented in the environment before became present (not just noticed, not just available) – they come into existence – as the organism grows, matures and learns” (p. 107).

Heft (1989) attempts to clarify affordances that are intentional and also those affordances that have applicability in sociocultural contexts. He sees the sociocultural context as an extension of the concept of affordance but one that is “warranted once affordances are carefully grounded in an intentional analysis of perception” (p. 1).

**Object-subject Relationship**

The analysis or even the description of affordances and the organism-environment relationship requires an understanding of the nature of the object-subject relationship. In the ecological view it is possible to describe affordances as both objective and subjective as well as being neither (Gibson, 1979). As mentioned earlier, an attempt to categorise affordances as having either an objective property or a subjective property ignores the notion that they have both (or neither) at the same time. “An affordance cuts across the dichotomy of subjective-objective and helps us understand its inadequacy. It is equally a fact of the environment and a fact of behaviour. It is both physical and psychical, yet neither. An affordance points both ways, to the environment and to the observer” (Gibson, 1979, p. 129).
Heft (1989) also sees affordances as being both objective and subjective, but at the same time not fitting definitions of those properties. They are not objective because “they are not specifically independent of an individual” but they are not subjective “in the sense that they reside in the mind … they are ecological facts” (p. 4). He describes them as “relational in nature”. He argues that despite being relational they are not dualistic as dualism requires a distinction between the two properties – one against the other – or makes each property separate. “With respect to environment-individual analysis, a relational concept refers to a property that emerges out of the interactions between an animal and the environment” (p. 4). Affordances are a synergy of that system.

Gibson’s idea is that affordances are invariant; always there to be perceived, even if the organism doesn’t need or, as in Sanders’ microscope example doesn’t have the experience, to act on the perception or to even perceive it. This view is a departure from the Gestalt view that Gibson was influenced by in the development of his approach. Gibson’s emphasis on the invariance of affordances is significant in relating his theory to this study. He sees his hypothesis as a “culmination of ecological optics” he adds that: “The notion of invariants that are related at one extreme to the motives and needs of the observer and at the other extreme to the substances and surfaces of a world provides a new approach to psychology” (p. 143).

Whether affordances are invariant as Gibson suggests or whether, as Ginsburg (1990) suggests, that since affordances (or more specifically, meanings) are “dependent on the state of the organism, and therefore not simply present in the environment for detection” (p. 349) their existence is not in doubt, nor are the underlying principles of the ecological approach. Any debate is merely about the nature of their existence and the ways in which they are perceived. This is significant in that it relates to the child’s perceived affordances of the electronic environment and possibly their understandings of what the environment of this study (more specifically on any given day) affords, and of the affordances of school. It is also important to demonstrate that Gibson’s theory is not exact (I don’t think it was meant to be). It also allows for the development of understandings about the way the children in the study perceived what was afforded, as well as allowing for understanding the children’s misperceptions.
Environments and Environmental Relationships

Gibson’s use of the term ‘a world’ in his discussion of the organism-environment relationship raises possibilities for the elaboration of that term and its application to affordances in the electronic environment (or world) as well as to the world (or worlds: classroom, school, research project) in which we live. Accordingly, it becomes appropriate to investigate the electronic environment in order to discover, discuss and analyse its affordance. In an ecological approach this is only truly possible, however, when that discussion or analysis is made from the perspective of the organism in question; the children of the study.

Through the ecological approach and from its psychological view of the world and the interactions of the world it is possible to look beyond the physical world to find an environment that an organism can interact with. Since all interactions are relative, all perception is relative, it is not unreasonable then to suggest that environments themselves can be perceived and accordingly interacted with. This is especially the case if we accept that environments are constituted from the perspective of the organism (Noble, 1981).

Accordingly, it is appropriate to investigate the electronic environment as an entity and from the perspective of what it afforded the participants of the study. It is also appropriate, and more will be made of this in both the methodology and the discussion chapters, to investigate the environments of the school, the classroom and the project itself. These investigations need to be made descriptively and analytically from the researcher’s perspective but also, staying true to the ecological approach and as far as is possible, from the perspective of the individual participants.

The relationships between organisms and their environments can of course be interpreted from a number of perspectives within the ecological approach. My use of the term ‘world’ and its connection to ‘environment’ may be seen to be at odds with Noble (1981) who makes a distinction between the two terms. In his interpretation of Gibson a ‘world’ is “an entity independent of organisms; the latter entails organisms to be environed” (p. 82). Regardless of this semantic distinction there is a measure of
agreement about the unique relationship humans have with their environments. This relationship includes the idea of socially constructed meanings and perceptions that are construed as a result of the influence of others in the organisms’ life (Noble, 1981). There is also the notion of ‘experimental interaction’ that humans have with their environments and that these actions are “invested with meaning and consequence by others of the social group” (Noble, 1981, p. 80). Gibson’s idea of coperception in which he proposes that the act of perception of the environment (externally) is also, at the same time, an act of perception of oneself (internally) is developed by Heft (1989) and by Noble (1981) who link it to socioculturally developed understandings. For Noble this coperception is “engendered by actions of others” (p. 80) and for Heft it is an extension of intentionality in interactions and culturally mediated meanings that include a history of those interactions. Even though an affordance or an interaction is taught or learnt, whether it is socially constructed or not, it still has functional significance from the perspective of the individual organism.

**Perceived Environments and Semiotics**

While it is possible for affordances to be both perceived and misperceived it is also possible for symbolic entities to offer “a variety of affordances for organisms able to notice them and whose experience prepares them to perceive their potential” (Sanders, 1997, p. 108). Sanders sees affordances as opportunities for action within an environment as perceived by that organism framed within the reference of what that organism ‘can do’. Hence, if an organism can think, imagine, pretend then not only are opportunities for imagined affordance created but also opportunities for imagined or perceived environments are created. For Sanders the environment is not limited to actuality, rather it includes an organism’s potential for activity. An environment can, according to Sanders, include physical components, symbolic components as well as imaginative and conceptual components, “there is no need for the environment to exist anywhere else but in the imagination. All that is needed … is some meagre conception of the characteristics of the environment along with some specification of the characteristics of the point of view from which the environment is encountered” (p. 108). Thus it is appropriate to accept that perceived environments, in particular those perceived by and interacted with by children, may not always align with our own notions or perceptions of what an environment might be or what it affords.
This is relevant because an analysis of the relationship between child and computer (or computer environment) relies on acceptance of the existence of affordances and on an understanding of the nature of affordance and of the complementarity of the relationship. It also relies on the acceptance of the existence of an electronic environment that the children perceive. This is quite possibly a very different environment to that an adult (even one who acknowledges its existence) perceives.

To expand this idea from an ecological perspective it is possible and not unreasonable to suggest that childhood itself could be seen as both an environment and an organism. A child’s world is very different from the world of an adult thus, being a child is its own existence. We can then refer back to Gibson’s use of the term ‘a world’ and the implications that has for psychology. The ‘world’ of childhood is not the world of adulthood; the environments within that world are in a sense parallel but separate from adult understandings and perceptions.

In his attempt to apply an ecological approach to semiotics, Windsor (2004) describes how normally in semiotics “an event which is perceived (the expression, sign or signifier)” is recognised as being a physical event or object, while the “meaning which is interpreted (the content, signified or interpretant)” (p. 179) is not. He argues that distinctions made between indirect and direct perceptions, as proposed by Gibson, when applied to semiotics can be misleading. His perspective for this approach is his wish to develop understandings of semiotic perception, especially in relation to the arts. He is also attempting to “identify the way in which our perception of signs’ meanings might be seen as the perception of affordances, rather than the perception of the signs’ interpretants, or their referent objects or events” (p. 181).

For Windsor an ecological approach removes the need for distinctions between signifier and signified. In the same way that the objective-subjective dichotomy is overcome (Gibson, 1979; Sanders, 1997) through the relational nature of affordance, their being part of both the environment and the organism, Windsor argues that an organism is not reacting to or interpreting stimuli but discovering affordances “of events and objects through the pick-up of stimulus information” (p. 183). He talks of a “system of cultural agreements [that] is neither internal or external to the organism,
but is instead a relational property emerging from acting and perceiving within a social environment” (p. 183).

Windsor represents affordance as a triadic relationship between stimulus information, the organism and the environment. It is his view that the stimulus information exists relationally with the environment and the organism, and that perception is not of the stimulus as such but of the affordance within this relationship. Within this view affordances are not seen as connecting the organism and the environment into (or in) a relationship but rather as a description of that relationship. This relational view is central to both the ecological approach to visual perception and to the ecological to semiotics. Windsor explains that “any of the three terms can take on the status of an interpretant relating the other two terms: organism and environment are related through stimulus information, just as organism and stimulus information are related through the environment” (Windsor, 2004, p. 193).

In summary this section has outlined Gibson’s ideas of affordance and the underlying principles of the ecological approach to visual perception. It has also presented views from the literature that expand, critique and analyse the approach into the areas of ecological psychology and ecological semiotics. Key principles underline these ecological approaches. The relational properties of all interactions between organism and environment are paramount; everything that occurs is relational and relative to the organism. From this relational view it is possible to begin to understand how this approach removes the need for an object-subject dichotomy and how analysis or understanding of this relationship should be made from the perspective of the organism. Using these ideas this section has attempted to construct a basis for a theoretical framework that acknowledges that environments and affordances can be perceived, imagined, real, shared, mistaken or any other quality within human capacity. This framework also allows for the notion that a child’s relationship with environments is different from an adult’s and that even childhood itself might constitute an environment or world in which the child exists.

In presenting this section on affordance I am mindful that the term is used widely throughout education and in particular in the area of ICT in education. I have deliberately and specifically restricted my discussion of affordance to the ideas of
Gibson and the importance of relationship. In my use of the term, an affordance exists because of the relationship between organism and environment. An affordance can be an opportunity for action or a restriction to action, the example of a surface affording support applies to the perception of support as being possible (opportunity) or not possible (restriction). In some areas of the literature affordance is seen as something that can be orchestrated or at least attempted to be orchestrated (Kennewell, 2010). There is also some degree of confusion about what the environment is and what an affordance is. Webb (2010) and Kennewell (2001, 2010) both refer to the work of Greeno (1998) when talking about affordance. In terms of the current study Greeno’s ideas of affordance and constraint are not applicable. Constraint and affordance are different things for Greeno. He uses affordance from a situational perspective and defines them as “if-then relations between types of situations” (p. 9) that involve antecedence and consequence dependent on the presence of personal properties and environmental activity. This is close to but not the same as Gibson because it assumes a certainty of relationship and activity. In the Gibsonian sense (the sense that I apply in the current study) the organism/environment relationship is different, it is not so much ‘if-then’ as it is ‘if, if-perhaps, perhaps’ and this relationship could be different every time is applied. The antecedence and consequence are entirely relational and are entirely perceptual.

When Kennewell (2001) argues that “constraints are not the opposite of affordances; they are complementary, and equally necessary for activity to take place” (p. 106), he uses the example of a door; if it is open it affords entry, if it is closed in constrains entry. I argue that this is in effect a redundant argument and that a constraint is an affordance. A door affords entry and non entry; the action afforded is entering or not entering. But it can also afford closing and opening, security and imprisonment, seclusion or comfort, and anything else that the organism relating to it perceives.

Sanders’ (1997) view of affordances as opportunities for action fits with this notion but as discussed earlier, these opportunities are perceived by the organism and may well be imagined. Kennewell (2010) talks about teachers orchestrating affordances and constraints but in the Gibsonian sense they are relational and cannot be orchestrated, they can be acknowledged and, as Kennewell suggests, they can guide teaching outcomes but they will always remain elusive in that they are a product of
the reality (possibly imagined) of the individual organism. Of course this argument is entirely semantic and the notion of rightness and wrongness is not a part of it. My argument is made to clarify my use of a term that is used widely; in the words of Led Zeppelin, “you know sometimes words have two mea-enings” (Page & Plant, 1971).

**ICT and Education**

A significant area of focus for the current study is the role of the computer and the electronic environment and the relationship the participants have with that environment in the compositions and compositional process. It is clear that musically the computer allows children to do things in new ways and to overcome musical technical deficiencies in order to compose or to create works of greater complexity (although I don’t like to use that word) than they could without the computer (Barrett, 2003; Nilsson, 2003; Reynolds, 2001). Amongst other things children do not need to rely on other children to understand their ideas, they do not need to be able to notate a piece in order for it to be played, they do not need instrumental mastery in order to play their own works and they are presented with an almost unlimited canvas of instruments and sounds from which to create their pieces. The affordances of this environment are something that is particularly attractive to me. The following section presents an investigation of literature that is focused on research that investigates the enabling power of ICT in education.

Underpinning this study is a personal belief about the relationship that exists between children (young people) and computers. In using the term ‘computers’ I am really referring to much more than the box that sits on the desk; regardless of whether that box is a phone, a music player, a laptop (or netbook), a hand held device of any description or a standard personal computer like the ones used in this study. I have referred to Papert’s ideas of computers being knowledge machines earlier in this chapter. These are powerful ideas (deliberate use of this term) and inform one significant part of my own beliefs about computer use and children. Another significant part has its roots in the writings of John Perry Barlow, one time lyricist for the band *The Grateful Dead* and co-founder of the Electronic Frontier Foundation. In the early 1990s Barlow experienced first hand a new form of interaction and communication in cyberspace and developed ideas about the nature of that ‘place’ and
its ‘inhabitants’. It is these ideas that I now present with the specific purpose of presenting a means of explaining the way children think about computers and how the affordances of the electronic environment could be perceived.

In an interview in *Australian Personal Computer* with Nat Tunbridge (Tunbridge, 1995) Barlow presented his views about ‘natives’ and ‘immigrants’ in the worlds of computing. His view was that anyone over 25 was an immigrant and anyone below that age was a native. This notion of immigrant and native is significantly different from that of Prensky (2001), whose ‘digital native’ and ‘digital immigrant’ ideas are to do with perceived differences in young people’s skill levels and changing brain patterns. Barlow wasn’t talking about skill but about the mindsets that young people have towards cyberspace. These ideas first appeared in 1990 in an essay by Barlow called *Crime and Puzzlement*. In this work (Barlow, 1990) he creates the analogy of cyberspace being like the Wild West:

> Cyberspace, in its present condition, has a lot in common with the 19th Century West. It is vast, unmapped, culturally and legally ambiguous, verbally terse (unless you happen to be a court stenographer), hard to get around in, and up for grabs. Large institutions already claim to own the place, but most of the actual natives are solitary and independent, sometimes to the point of sociopathy. It is, of course, a perfect breeding ground for both outlaws and new ideas about liberty (no page).

The current study is not about outlaws and liberty, but the idea that cyberspace affords completely different things to different groups of people is very appealing. More appealing is his description of a father’s perspective of computers and cyberspace, which he refers to “as an immigrant's fear of a strange new land into which he will be forcibly moved and in which his own child is a native” (p. n.p.). This idea is expanded by Bigum and Lankshear (1998), Lankshear and Bigum (1999), and by Lankshear and Knobel (2000) with a focus on the mindsets of the individuals using computers and interacting with cyberspace, and what that means for schools, schooling and learning.

The notion of immigrants and natives is clarified by Lankshear and Bigum, who prefer the terms ‘insiders’ and ‘newcomers’; they use Barlow to “distinguish the two broad mind sets identified; one affirms the world as the same as before, only more technologised; the other affirms the world as radically different, precisely because of
the operation of new technologies” (1999, p. 458). It is this affirmation (in the case of the children in my study, affirmation through action and belief) that is critically important in the understanding of the relationships with and affordances of the environment.

A wonderful example of Barlow’s approach to mindsets and relationships is his discussion on the economy of cyberspace. Barlow presents a cyberspace economy that instead of being built on supply and demand, where scarcity equates to high value, is built on availability and relationships:

It’s dispersion that has the value, and it’s not a commodity, it’s a relationship and as in any relationship, the more that’s going back and forth the higher the value of the relationship. People don’t get this if they’re coming from the industrial-era model (Barlow in Tunbridge, 1995).

With this background in mind, the following section presents an overview of literature from ICT in education research that is relevant to this study.

There are a number of parallels between the field of ICT in education research and the field of ICT in music education research. The first is that there has been a stream of focus that deals with tools and usage; what equipment is being used, how many schools/children are using it and attempted connections between technology and learning outcomes. Within this stream are many large projects and government reports into areas such as teacher attainment (Cox & Abbott, 2004), pupil learning and attainment (Harrison et al., 2003), student ICT literacy (Ainley, Fraillon, & Freeman, 2007) school use (Cuban, Kirkpatrick, & Peck, 2001) and, amongst other things, the impact of ICT on students (Condie & Munro, 2007).

A second stream, and one that has much more relevance to the current study, is that of educators working with technology as an enabler of different things. Building on the work of Papert, Resnick (2002, 2008) presents children’s playful learning in creative and collaborative environments while working with the programming application, Scratch. In these environments children are encouraged to explore new and different ways of communicating ideas and of collaborating with each other on a global or local
level. Prior to the development of *Scratch*, Resnick (1998) was interested in investigating digital manipulatives that accommodated children in active learning, in problem solving and complex thinking, in empathetic contexts and in reflective practice. These ideas fit well with Papert’s notion of constructionism, wherein learning takes place “in a context where the learner is consciously engaged in constructing a public entity, whether it's a sand castle on the beach or a theory of the universe” (Papert, 1991, p. 1). This focus on children making, creating, exploring, playing and communicating, and what happens when they do those things in electronic environments is closely aligned to the kinds of computing that are represented in the current study.

Narayanan (2008), also working with *Scratch* and with *Pico Crickets* (programmable interactive devices) presents a view of technology enabled learning that fits with a philosophy of Slow Schooling, where time is taken, not in getting through the curriculum but in experiencing the physical and virtual environment. Her work with impoverished slum dwellers in Bangalore presents a use of technology that connects the child with their environment and allows them to interact with it and investigate it while at the same time developing language, computer and cultural skills. The technology is central to her work but it is never taught. Narayanan (with reference to Shel Silverstein (1981)) asks her own Zebra Questions about technology and learning. She presents an edited version (presented at the beginning of this chapter) of Silverstein’s poem, which she then relates to her beliefs about “the landscapes of education and technology”

- Have the contours of this landscape been created by the tools of technology defining the nature and scope of the learning environment?
- Or have the contours of this new landscape been defined by learning needs and contexts which in turn inform the creation and sustaining of digital or virtual learning worlds?
- Are the horizons of this landscape defined by the convergence of traditional literacies integrated with conventional and new medias?
- Or do the distributed networks of new media define both the horizon and reach of the communication and literacy agendas of teachers and educators?
• Should the development goals of education with technology focus on the development of the brain, the intellect and the mind?
• Or is about developing the heart and expanding the inner self? (2008, p. 1)

These questions about learning and the human experience in terms of a relationship with technology fit well with my previously expressed ideas about mindset and affordance.

The well known work of Sugata Mitra and his Hole in the Wall projects is another example of the use of technology in education as an enabler of powerful things. Mitra, like Narayanan does not engage in any instruction of technology, preferring to observe children playing, experimenting and teaching themselves about the electronic environments that they are beginning to experience. In a significant body of work Mitra and colleagues (Inamdar & Kulkarni, 2007; Mitra, 2000, 2005; Mitra et al., 2005; Mitra & Rana, 2001) present a Minimally Invasive Education (MIE) model in which the principles of play and experimentation underpin a learning environment that is non instructional and which encourages peer support. This model is applied across the curriculum and places the learning and the technology in the hands of the learner.

Throughout this body of work, running alongside the notion of MIE, is the idea of learning as “a self organising system”. Mitra puts it this way:

Self organising systems have low predictability, they are "grown" and not "made". In a sense, they represent our transition from the industrial to the information age. "Making it happen" was the management paradigm of the age gone by. "Letting it happen" will be the strategy for building the systems of the new age.

The real paradigm shift in education will be the conversion of the educational process into self-organising systems. (Mitra, 2000, p. 16)

These ideas represent an approach to education and to ICT in education that has its genesis in the works of Papert and is an example of the “modern traditionalism” that McDougall (2005) proposes educators who use ICT engage in; an acknowledgement of the important work done by thinkers like Papert in the Twentieth Century. It, like
that of Resnick and Narayanan, and the current study, also has its roots firmly planted in the acknowledgement of the centrality of play.

I do not think it coincidental that two of the researchers that I have devoted considerable time to in this section are from India. Their responses to the use of technology in education are responses that are dictated by the poverty and/or remoteness of the children in whose education they are interested. Narayanan’s responses are also driven by a desire to connect with and to a lost culture. Similarly, work with Indigenous Australian societies using technology in education has been driven by the need to respond to poverty, remoteness and a lost culture. By no means as large a project, the Burarra talking book project (Auld & Darcy, 2008) is an example of the use of technologies in the recording and presentation of indigenous languages to children in order to develop literacy in what is their first language.

The Burarra project, like that of Narayanan’s is an example of educational technology outside the realms of ‘traditional’ schooling and is an example of the learning being placed in the hands of the learner, supported by technology with minimal (visible) intervention. It takes technology out of what Narayanan calls the ‘plenitude’. For her this plenitude is an example of and a result of old ways of thinking that do not see what technology can do and be. She says:

What I also realize is that our contemporary notion of school is a place where the official curriculum is driven by ideas and attitudes that are expressed or implied in the materials, textbooks and technology that form yet another plenitude that is engulfing teachers, curriculum designers and policy makers. This is due to in large part to conventional thinking about digital technologies and learning, a way of thinking that argues that more technology, greater access and better connectivity will deliver faster learning for more learners across far distances in short periods of time (Narayanan, 2008, p. 2).

There is strong resonance here with the ideas of Barlow and Lankshear already expressed in this chapter where the mind set of the educator needs to acknowledge the mind sets of the learner when using digital technologies and the perceived affordances therein.
The work of Vincent (2004, 2007, 2009) in investigating the relationships between learning styles, multimedia and the crossing of semiotic boundaries is another example of the second stream of ICT in education research that asks what happens when children can play and explore with computers, what things can they do with computers that they couldn’t do without them and most importantly, what can we learn about the ways children think and learn. Vincent established a link between the ability to write text and the ability to ‘see’ that content. Children who had a clear mental image of what they were writing about were able to convert those images into written text. For children who couldn’t picture what they were writing (who had no mental image), the writing couldn’t happen. Through the use of multimedia authoring (in this case the Logo based program MicroWorlds) the ability to make the pictures electronically, supported the ability to write the text. Beyond this remarkable outcome were the stories of engagement, heightened self-esteem and what Csikszentmihalyi (1990) refers to as ‘flow’.

The examples presented from what I term the second stream are only a sample from the literature that demonstrate a way of thinking about and investigating the ways in which computers and computer technologies are used in educational settings with children. They accord with my own views about the power of the technology to allow powerful things to happen. I conclude this section by providing a link between the two areas that are significant in my own beliefs about the use of computers in education. My desire to investigate the relationship with the environment required me to present the ideas of Barlow and his notion of mindsets and cyberspace. His ideas are in accord with those of Papert who said that when computers “enter the private worlds of children everywhere. They will do so not as mere physical objects” (p. 4).

Summary

In this chapter I have presented literature on play, on affordance and an ecological perspective. I have investigated music education literature and discussed the ways in which the compositions and compositional approaches of children have been closely aligned to adult understandings of the compositional process. I have been critical of some researchers and have praised others. I have tried to connect what has been said
about ICT in music education to what has been said about ICT in education. I have illustrated how certain ways of thinking about and working within the field of ICT in education have influenced my ways of thinking and working, and influenced the structure of the current study. At all times I have attempted to provide a solid basis for the theoretical positions I develop throughout this work.
Chapter 3

Methods

Our actions are offered to others as open sets of possibilities to be more closely defined should the need arise. There are no data, and *a fortiori* to attempt to formulate the descriptions of regularities in the sequence of human actions as data, is folly (Harré, 1981, p. 17).

Introduction

This chapter outlines the methods and the methodology of this study. There is sometimes confusion between these two terms but I find Strauss and Corbin’s (1998) description helpful in making the distinction. They say that methodology is “a way of thinking about and studying social reality” whilst methods are “a set of procedures and techniques for gathering and analysing data” (Strauss & Corbin, 1998, p. 3). The chapter describes the setting, the hardware and software, and the participants, and then details the ways in which data were collected and analysed.

This study is about children, their compositions and their relationships with each other, with me and with their environment. In such an investigation there is little that can be discovered quantitatively that will tell the researcher anything about how each composition was composed, what the relationships with the environment contributed or anything else about the human experience of music making. I have collected, numbered and categorised all of the compositions according to a developing typology of compositional approaches that was built from my readings of Folkestad, Hargreaves and Lindström (1990; 1998), and Nilsson and Folkestad (2005). While the collection of files in this manner may be seen to support quantitative purposes, in this study it serves to support qualitative analyses. I use this categorisation to present numerical data represented graphically in Chapter 4, the typology appears in Chapter 5 and discussion of the compositional features appears in Chapter 6.

The qualitative methodological approaches adopted in this study have their theoretical roots firmly attached to the ideas and the naturalistic and constructivist approaches of the postpositivist paradigms described by Lincoln and Guba (1985), Harré (1981),
Reason and Rowan (and the New Paradigm Research Group) (1981), Reason (1988) and others. It presents individual case studies of the participants and their compositions and becomes a case study in and of itself. A detailed discussion of this study as natural inquiry, the role of narrative in naturalistic inquiry and the methodological approaches adopted are provided later in this chapter.

As described in Chapter 2, this study draws on a theoretical framework built on Gibson’s ecological approach (Gibson, 1979). My interpretation of this approach requires an attempt to understand and describe interactions within an environment from the perspective of the organisms within that environment. Data are analysed and discussed as part of a narrative, as individual offerings, as detailed analyses of events and actions, through a typology of compositional practices, and through discussion of significant compositional features. My approach to the data, and to the study as a whole, is informed by the hermeneutical approaches as described by Ödman and Kendeman (1999), Brown and Heggs (2005) and Ricoeur (Jervolino, 1990; Kearney, 1984, 2004; Ricoeur, 1991, 1998). A discussion on the relevance of the hermeneutical circle and my recursive approach to the data appears later in this chapter.

A previous study (Reynolds, 2001) investigated the ability of children to work successfully in an advanced music software environment. That study investigated the compositions produced in that environment but did not investigate the processes of composition, nor did it investigate at any depth the relationships that existed between the children and the environment. The current study employed software that was very similar to that used earlier. Having already established that children could operate with such software I was not concerned with their abilities to use the software, more with what they did with it and how they related to it. In order to investigate these things the children in the current study were asked to compose music in a weekly music session with me. While I supported them with many ideas and suggestions they were free to compose according to their own choices. They did not have to justify their compositions, nor were they required to meet any set compositional criteria; just compose music. Their compositions were collected and analysed in ways that are detailed in this chapter.
Setting

The research was conducted in an Outer Eastern suburban primary school in Melbourne, Australia. I chose this particular school because it was close to me geographically and personally; I had spent eighteen months there as the classroom music specialist two years prior to this project. I enjoyed a good professional relationship with the principal and staff, and was familiar to those parents who had children at the school during my time as teacher. I was also known to the children. These factors were most important to me when choosing a site in which to conduct research. I knew that the school did not offer formal music training and that it had experienced difficulty finding suitable specialist music teachers since my departure. I was interested in the processes children used when composing and how the software affected their musical understandings and development, and what role the environment played, so whether or not any of the participants had received formal musical training was of little or no consequence. It turned out that the participants had received little or no formal training so this became irrelevant to this study.

For reasons of timetabling efficiency and access I chose to work with children from only one class. I wanted to work with children in the middle to upper primary years based on my experience in my Masters study (Reynolds, 2001). Following the recommendation of the school principal I chose to work with children from one Grade 5/6 class, age range between 10 and 12 years. All of the children in that class were offered the option of participating, although I had only planned to work with six students, three girls and three boys. As it turned out seven students indicated their willingness to participate and obtained parental consent. I accordingly accommodated all seven rather than excluding one child from the project. The size and scope of the study and the fact that I was the sole researcher precluded me from investigating the whole class. I also did not have the necessary software or hardware to work with that many students. Later in this chapter I propose a methodological framework based on Naturalistic Inquiry. Within that framework and other qualitative approaches, one of the aims of the researcher is to provide a rich description of the study. The current study investigates seven children, and does so deeply and richly. The depth of inquiry that I wished to achieve in accordance with my methodological approaches would not
be possible with a larger cohort. As it is, the amount of data generated was almost overwhelming.

When the study was conceived I was supposed to be working with my participants during their regular music class; that way they would ‘do music’ with me and the rest of the class would ‘do music’ with the classroom music specialist. This would mean that my project would cause minimal disruption to the normal school timetable and would allow me to conduct ‘normal’ music classes with this small group. As it turned out, numbers at the school for that year were lower than expected and a music specialist position was not filled. I thus had no access to the normal school day and opted to run my sessions before school. Luckily all participants agreed to this change and despite the problems detailed in Chapter 4 the sessions proceeded successfully.

The Participants

As described above the participants were seven children from one Grade 5/6 class. The children (four boys and three girls) ranged in age from 10 to 12 years with two coming from Grade 5 (Students K and N) and the rest from Grade 6. Throughout this study I refer to the participants using the following pseudonyms:

- Student A
- Student C
- Student K
- Student L
- Student N
- Student Na
- Student R

Students A, L, N and R are male, while Students C, K and Na are female

None of the children had any significant formal music training but all expressed some interest in learning an instrument, especially when they moved to secondary school. Individual reasons for the children to volunteer for the study are detailed in Chapter 4 but the notion of it sounding like fun is shared. I met with the seven interested children and the school principal and outlined the nature of what I thought they would be doing. I interviewed the children individually prior to the commencement of the
composition sessions and at the end of the data collection period. Details of those interviews with each child are also presented in the individual case studies of Chapter 4.

The study took place over most of a school year. There were 24 individual composition sessions of approximately 50 minutes each. These weekly sessions took place between 2nd March and 9th November 2004. There were two, three week interruptions for school holidays and one week of school camp. The school year ran from early February through to mid December, so this study constituted a significant part of the children’s year. I met with the children early in the school year to discuss the project and establish informed consent (from them and their parents). I then formally interviewed each child once on 17th February, before the study commenced and once on 1st December, after the data collection was completed. As noted earlier, the sessions started before the school day (8.45 a.m.) and ran into the first period (9.35 a.m. approximately).

**The Classroom Activities**

Two software applications were used by the children during the project: *Cakewalk Home Studio* (Cakewalk, 2004) (hereafter referred to as *Cakewalk*), a multitrack midi and digital audio application; and *Audacity* (Audacity, 2003), a multitrack digital audio recorder and editor. Detailed descriptions of these applications are provided in the section on software later in this chapter.

The children had no previous experience working with either of the software applications so I needed to structure the early sessions in such a way that they developed the necessary skills to work effectively with those applications. I decided to work only with one application to start with in order to avoid confusion. I chose *Cakewalk* because it was the most complex and I felt that it would provide the greatest variety of compositional options to the children. Having worked extensively with this application and the extended version of it, I was very familiar with the way it worked and confident that I could support the children in their skill development.
Activities were deliberately open ended and although there were times when I tried to direct activities, for the most part the children were left to compose in the ways they wanted. Directed activities from me included setting time restrictions on length of compositions, encouraging children to include a set number of instruments, using external sources, setting compositional tasks such as composing a piece about a colour, and in the case of one student, in order to assist her in getting started, asking her to compose something about a tree. For the most part these attempts at setting tasks were ignored or not strictly adhered to. These restrictions or directions on my behalf were attempts to focus the children, so the fact that they were not necessarily followed was not important to the study itself.

In the very first session I took the children through some of the features of the program and let them play. I deliberately avoided setting rigid tasks for them as my purpose was not to teach them the software but to discover what they did with it. I introduced some of the features and vocabulary of the midi environment and let them play. The first thing the children did was to play with individual sounds by altering the patch names from within the software. This was very exciting for them and they enjoyed playing with all the names of the patches. The following transcription of the first few minutes of the study demonstrates the way the children engaged with the activity: (In the following example and in all transcriptions used in this study, the numbers in square parentheses [] represent the time elapsed in minutes and seconds. The children are represented by an initial and I am represented by the letter ‘I’)

I: We’re going to start working – go to a midi track – that’s Track 2. Use the not fully maximised one the – Go to the one marked PCH
L: Yow – None lead 8 bass
[1.07]
N: Wow oh hoh
I: If you click the arrow next to it
Student N is whispering away to himself – he has seen something that excites him – a list of instruments
[1.19]
N: (still whispering with a rising tone) Bass guitar, banjo, …roll (indistinguishable) dynamite (he sings wah wah wah)
I: That’s a list of all the sounds that you can use to …
N: Make a song?
I: Make a song. I don’t know if this will work or not but I’m going to get you to choose one of those.
C: Oh
L: Where’s bass guitar
A: I’m going to do this muted trumpet
R: I’m going to use this music box
C: Tango funny thing
I: Has everyone chosen something?

They have chosen instruments – R – music box, A- electric guitar clean, N – bass guitar, L – still looking (A helps him), K – taiko drum, C – Accordion, Na?

(2nd March)

It is easy to appreciate the enthusiasm of the children from this brief example. This is typical of the interactions that occurred throughout that session.

In this first session I continued to introduce them to features and to let them play. I showed them the piano roll (see Figure 3.2 below) and then how to connect a microphone and record their own voices. The following transcript from much later in the first session shows that the fun is still going on but that the children are working quite competently with the software and are discovering things for themselves:

I: Something I didn’t tell you was that if you don’t mute the first track that you’ve recorded
A (finishing my sentence for me): The other one plays over the top one
I: The other one will play at the same time so it will record itself over it – so you must press M on track one
C: I don’t know if I’ve used track two or track 3
A: I’ve deleted that track – that’s good

[21.35]
I: Who’s managed to record two tracks?
A, C, R say they have.
N: I’ve managed to record 5
R: Can I delete mine 'cause I hate them both.
K: I’ve made 7
I: good
N: This is so fun. I’m going to undo something

(2\textsuperscript{nd} March)

As the sessions progressed there was less instruction from me. I pre-recorded some synthesiser sounds for the children to import as wave files into their pieces but these were only used by Student K and much later by Students A and N who made significant alterations to them. Throughout the project I tried a number of devices that I hoped would provide structure and inspiration but these were largely ignored or tolerated and not used to any depth. In the second session I suffered major computer problems and tried to get the children to write stories that they could compose to; this was not successful. In Week 6, in what turned out to be an activity that the children enjoyed, I brought a collection of Vietnamese water puppets to the session in the hope of providing a stimulus or focus for their compositional activities. In that session I got the children to make written notes of the features of the puppets and to write simple stories about them. This written activity in itself did not engage the children but the compositions over the next few weeks contained a number of references to the puppet characters. In some cases the children even used Asian style sounds. In my introduction to the session in Week 7, I discussed the use of leitmotif in the music of Star Wars in an attempt to encourage the children to think about assigning sounds or ‘tunes’ to different puppets, but this device did not appear to have been used. The other successful prompt I used with the children was to ask them to compose a piece about a colour.

Throughout the project I struggled with noise levels and had concerns that the boys were making too much noise. There are many examples of me asking the boys to calm down (they were having fun and at times were very enthusiastic). On a number of occasions I even threatened them with removal of the session. Thankfully, I didn’t have to do that and was very reluctant to enforce such a measure. In an attempt to emphasise my concerns and in order to work without interruption with the girls in the study I made one session (17\textsuperscript{th} August) a girls only session. The girls were appreciative of this and particularly enjoyed the session.
For the most part, however, I left the children to their own devices trying to guide and encourage rather than to teach software use or compositional approach. My attempts at controlling and at musical instruction are reported elsewhere throughout this study but it is worth noting here that for the most part any musical advice I gave the children was overwhelmingly ignored; always politely, but usually ignored.

I chose to introduce the children to Audacity when I judged that they were ready to explore different approaches or when the need arose. Its introduction was not formal in that I did not sit them down and take them through features as I had with Cakewalk. I didn’t introduce this software until Week 17 (24th August). In that session I showed the program to the boys first. I felt that they needed something different and that it was appropriate to introduce it at that point. The session transcriptions show that there was very little instruction in its use; again they played with the software and I assisted in problem solving and providing guidance.

The sessions themselves were very loosely structured with no specific instructional goal. Typically, each session commenced with me talking to the children about what I thought they could get done in the time, reminding them of features of the software, or reminding them to save their work as they went along. A number of times I tried to get them to compose a piece that lasted for a certain amount of time (30 seconds) or that had four tracks in it, or for them to try and finish a piece that they had been working on. These were really the only instructions I gave them. They got bored quickly listening to me telling them things and for the most part just wanted to get to work making music. Usually, my approach was a response to what the children had done in the previous session. Mostly, I wanted them to experiment and to discover, and hopefully to compose.

Even though the sessions started before the school day and required the children to get to school early and possibly miss out on before school play time, they all attended consistently throughout the year. Inevitably there were some absences due to sickness or other commitments but there is no evidence of any child forgetting to come or just deciding not to turn up. In the week of the girls only session one boy, Student A, turned up anyway and was very disappointed to be told that he wasn’t required.
Student N, when asked if there was anything that he didn’t like about the project replied; “Oh, it was so early in the morning” (1st Dec). This response and the fact that sessions were so well attended indicates the pleasure the children were experiencing doing this project; they had a lot of fun.

**The Hardware**

The study took place in the school’s computer laboratory, which is housed at one end of the library. The school computers were standard Windows XP machines with Pentium 4 processors. In order to accommodate the audio recording, midi sequencing and tone generation requirements of the project, I purchased and installed seven *Creative, SoundBlaster* sound cards. I used inexpensive stereo microphones and headphones.

I obtained six four-octave *Roland ED, PC300* midi keyboards that connected to the computers through USB. These keyboards do not generate their own sounds but rely on the sound card or other midi tone generators to do that. Polyphony is therefore dependent on the capacity of the sound card or tone generator. In the case of this study, midi sounds available to the *PC300s* were restricted to the 128 sound General Midi canvas. In order to accommodate the seventh participant I used my own *Yamaha W7* workstation/midi synthesiser. This synthesiser has a five-octave keyboard and can generate 384 sounds (although I restricted use to General Midi only). It generates its own sound (unlike the PC300) and allows the user to work across sixteen channels from the keyboard. It was connected to the computer through USB. Both synthesisers provide modulation/bender wheels and options for octave shifting.

**The Software**

Both of the applications used, *Cakewalk* and *Audacity*, provide powerful multitrack audio recording and editing capabilities but are significantly different programs. Neither was designed as a tool for young children.
Cakewalk

Cakewalk operates as both an audio recorder and a midi sequencer. Digital audio is sound that is recorded into a computer and digitised. An audio file contains the actual sound data as recorded. As described earlier, Midi is a protocol that allows a computer to communicate with a synthesiser.

Audio data can be recorded or imported into Cakewalk and represented as audio tracks along with midi tracks. Cakewalk allows for up to 64 audio tracks and unlimited midi tracks, although none of the student compositions used more than eight tracks.

Saving files in Cakewalk can occur in a number of different ways. The default format is as a project work file (.cwk), in this format the audio data is saved into a separate Cakewalk folder while the actual project file only refers to that location (resulting smaller file sizes). The second format is as a project bundle file (.cwb). In this format all data (audio and midi) is collected and ‘bundled’ it into one file location. Bundle files are much larger than project files. In this study if the children saved in the project work file format there was a risk that audio data was lost when the file was moved. This occurred on a number of occasions but in many cases I was able to reconstruct the files. Interestingly, even when saving as a bundle file Students C and K lost track of their audio data in one case. I was able to locate it for them on this occasion and the piece was then saved successfully as a project file. Dealing with a school network that allocates save locations that are different from the default locations suggested by the software was one of the causes of losing material.

Cakewalk allows for data to be viewed and manipulated in many different ways. Accordingly, it operates in many different views.

**Track View** (Figure 3.1): This is the default view and allows all midi and audio data to be displayed in a multitrack layout. This view is really a project view where tracks can be added or removed, overall tempos set, key and time signatures set and, amongst other things, midi channels and patches can be assigned.
Piano Roll View (Figure 3.2): This view is only available for midi data. It is a graphical representation of midi notes that resembles a piano roll. Events are represented on a grid that is divided into bars and beats. On the left hand side of the screen a piano keyboard is represented running top to bottom of the screen. The piano notes correspond to horizontal lines on the grid. At the bottom of the screen controller data can be represented in relation to notes.
Figure 3.2: Cakewalk piano roll view

In the piano roll view drums tracks are presented using diamond shapes on the grid and the list of percussion instruments within the patch displayed in place of the piano keyboard.

In this view a number of editing tools are available:

- **Pencil Tool**: A tool that allows notes to be ‘drawn’ on to the piano roll. Note values need to be selected prior to being placed onto the piano roll. The tool can also be used to shift notes on the screen and to alter their duration.
- **Eraser**: Removes notes from the piano roll view
- **Pattern Brush**: This tool has two main functions. First, it can be used to draw a series of notes onto the piano roll using the chosen note durations. Second, it can be used to draw patterns that already exist onto the piano roll. It is possible to create your own patterns and save them or to use those preloaded into the tool. Playing drums into a midi project using a synthesiser is very difficult. Accordingly, *Cakewalk*
provides sets of drum patterns that can be painted in using the pattern brush

The markings on the keyboard in the Piano Roll view as shown in Figure 3.2 represent heard pitch using an octave scale starting at C0 (lowest) and ascending to G10 (highest). This pitch system is represented against a musical stave in Figure 3.3 and is used throughout this work as a means of discussing pitch.

![Figure 3.3: Representation of pitch numbering in Cakewalk](image)

**Staff View:** This view is a graphical representation of midi data as musical notes on the stave. Notes can be added and edited in this view using the pencil tool in the same manner as in the piano roll view. The eraser is used in the same way as well. Multiple types of staves can be used including treble, bass, alto and tenor clefs as well as treble/bass combined and percussion notation. It is possible to alter the appearance of the notes by changing the lowest duration resolution; this is demonstrated in Figure 3.4, Figure 3.5 and Figure 3.6. The note values are not altered in playback, only in appearance. Midi data can be printed as musical scores from this view.
Figure 3.4: Cakewalk staff view at quaver resolution

Figure 3.5: Cakewalk staff view at semiquaver resolution

Figure 3.6: Cakewalk staff view at demi-semiquaver resolution

Audacity

*Audacity* (Figure 3.7) is a free, open source application that allows audio data to be recorded, imported and edited in a multitrack environment. The interface is very simple and it is easy to use. It opens as a blank project without any tracks.
Audio is recorded by clicking the *record* button. Each time it is clicked a new audio track is automatically inserted into the project. Existing audio can also be imported into the project. Both stereo (represented as one track with left and right sections) and mono (represented as a single track) data can be included in the same project. The multitrack view is shown in Figure 3.8.
Once audio is placed into the project it can be edited and manipulated in many ways. The effects menu allows files to be amplified, have echo or delay effects applied, time, pitch and speed to be altered, for data to be reversed, amongst many other choices. Individual track volume can be set and volume ‘envelopes’ can be drawn in to allow fade out/in or volume level drops at specific points.

Audacity uses its own proprietary file format (.aup) that saves the multitrack project and creates a data folder that contains all files that are related to that project. These data files (.au) are not playable in any other program and if the project file is separated from the data folder it will not load correctly. Projects, or selected files within a project, can be exported into stereo tracks in .wav, .mp3 or .ogg (ogg vorbis, a non-proprietary compressed file format similar to mp3).

Data Collection

Data took many forms in this study and were collected in many different ways. The research question asks:

When children compose music in an electronic environment, what are the processes they use, what does the environment contribute and what conclusions can be drawn about children’s musical understanding and development?

In answering that question it was necessary to collect data about the compositions themselves, about the process of composition and about the environment. From those data conclusions about musical understanding and development need to be able to be drawn. The process of analysis and the theoretical frameworks about that analysis are detailed later in this chapter. Also appearing later in this chapter is a discussion about the identification of theories that were grounded in the data and emerged from it. It is not appropriate to collect data without some purpose; even if one hopes to see theory emerge from the data this does not necessarily happen serendipitously. Accordingly, I drew upon my previous work (Reynolds, 2001) and the literature to guide me in my approaches to data collection. Since the compositions were created in an electronic environment using software applications that I had chosen, the collection of the actual
compositions was relatively simple; just save the files. The children were requested to save each instance of their creations but this did not occur with any regularity or discipline; I was working with children after all and for them the study was irrelevant, they were there to make music. The collection of individual compositions was essential to the data collection process but an analysis of those compositions without reference to the environment, and to the process of composition, would not adequately address the research question. It was thus necessary to record what happened within the environment (physical and electronic) to create a complete picture.

Every session was audio recorded using a single stereo microphone at one end of the room connected to a Mini Disc (MD) recorder. MD recorders convert analogue wave files into digital data. Each recording was transferred in real time to computer disc by recording it onto the multitrack audio recording program, Adobe Audition. Each session was also video recorded using a small home use Digital Video Camcorder. The camera was placed on a fixed tripod at the other end of the room. The video recording also contained an audio track recorded directly onto the videotape via a camera mounted stereo microphone. Video recordings were played in real time into the program, Windows Movie Maker, where they were saved as either .wmv or .avi file formats. This provided me with my first experience with the data in this form. This was, in fact, my second experience with the data, having experienced it when it occurred. These video files were then imported into Adobe Audition where, in session view (the multitrack interface), the audio from the video recording is automatically converted into a discrete audio track. Video is displayed in its own track as well as in a separate video window. The MD recording was inserted into the same Adobe Audition session giving two audio versions (recorded from different areas of the room) that can be played simultaneously or individually while the video data is also being played.

Adobe Audition allows for considerable editing and audio manipulation in the form of noise reduction, amplification, equalisation and other audio filters that are designed to enhance play back quality. These tools, not always as effective as hoped given the high levels of ambient noise, were used to improve understanding during transcription. Track cues (time based markers) can be applied across all tracks in a session, where they appear as dotted lines that run vertically across the tracks. The cue
time is represented in a separate cue pane that notes time in a variety of methods. For this study I used the ‘Hour: Minute: Second’ option. During transcription I placed cues into the sessions at points of interest or to keep track of events. These cue points are represented in the transcriptions thus; [25.20], to represent twenty-five minutes and twenty seconds.

The participants were involved in the creation of electronic musical works. Accordingly all of those works (or as many as the children saved) were collected and collated for analysis. Always struggling with the school’s network, I managed to direct the children to save files in personal session folders that I could access through my user rights on the school server. All files were burned to CD and then transferred to hard disc.

Sessions were transcribed verbatim (or as close as possible) within a framework of the retelling of events, actions, inferences and observations; thus creating the basis for narrative. The verbatim transcription of sessions was done in a manner that addressed Maxwell’s (2002) ideas of validity (see later in this chapter).

**Process of analysis of compositions**

The analysis of the children’s musical offerings was undertaken at many levels. I attempted many times throughout the study to get the children to use the ‘save as’ technique employed by Folkestad et al (1998) and Nilsson (2003) in which each time a change is made to a piece it is saved as a new piece using sequential numbering. Unfortunately, this did not happen as often as I would have liked. The children experienced some difficulty saving anyway (especially Student N) due to the set up of the school network. But no matter how many times I asked them, they seemed to forget to save and made numbers of changes before saving. They also tended to delete files that they no longer wanted rather than saving them for me to analyse. To them, the things they deleted were not required anymore; possibly even mistakes, certainly pieces that were discarded by choice. This was frustrating but indicates that the actual research component of the study was not interfering with the compositional processes; they were there to make music, not to save multiple copies of files to satisfy my
research needs. Despite this problem I was able to collect 261 individual music files for analysis. Many of these files were sequential versions of developing compositions.

Both Cakewalk Home Studio and Audacity work in a project environment; finished pieces can then be exported to or saved in a universally accessible format such as .mid (midi file) or .mp3 or .wav (audio file). Listening to the finished pieces in their exported state only allows for analysis to be made on what the pieces sound like. By analysing the pieces in the software environments in which they were created I was able to investigate the process of composition and identify significant compositional features that go beyond the sound of a finished piece. I was also able to make interpretations about the children’s interactions with their environment, and about the affordances of that environment. My analyses are not attempting to measure creativity, as is the case in many studies, rather to investigate the compositions and compositional processes within an environment. The creative process is inferred rather than investigated.

The first stage of analysis of the compositions was the copying of all pieces so that I was able to work with copies of the original rather than the ‘original’ itself. When each copied piece was opened I used the properties/information function of the software in which the piece was created to note the date and time of the original activity. I was then able to recreate each piece in its original form without risk of contamination or loss, I was also able to ensure that an accurate chronological record was established and kept.

The second stage of analysis was dependent on the software used. When working in Cakewalk I needed to reassign patches and tracks, where appropriate, so that the work played correctly through my synthesiser (I used at different times either a Yamaha W7 or a Yamaha S03 synthesiser). The nature of midi means that all midi synthesisers handle the data in the same way but that communication to synthesisers through programs like Cakewalk requires different settings to be applied. At times I was required to make some assumptions about actual sounds used but was able to refer to the audio recordings of the session in question to verify the sound selection. Sometimes the children did not correctly assign patches and either left the track with no patch selection (the software would play the last patch selected) or they would just
use the patch number. When this occurred there was no alteration to the original patch when I connected to my synthesiser, since the General Midi sound canvas is universal. The need to reassign patch, bank and tracks further reinforced the need to work only with copies of the children’s work. Prior to any analysis each of the pieces was copied into separate clearly marked folders (one for each child). As I worked with the pieces, making alterations to patches where necessary, or playing with quantisation or graphic representation to aid analysis, all pieces where only saved back into this clearly marked folder. This way I ensured that the analysis did not interfere with the integrity of the original composition; each of which was stored elsewhere. With Cakewalk pieces I was able to copy project properties directly into the project information window to ensure that there was no doubt about authorship and chronology.

The analysis in Cakewalk allowed me to deconstruct and reconstruct the pieces to aid my understanding. When children had copied tracks on top of other tracks I was able to separate those tracks to ‘look behind’ the finished product to see how it was actually constructed. When children used drum sounds in instrumental tracks or (as was more common) instrumental sounds in drum tracks, I was able to reverse the process to see if I was missing something. Sometimes children recorded audio into midi tracks and midi into audio tracks. In the latter case I was able to move that midi track to the appropriate place so that it played. I could alter tempo and play with a piece’s appearance so that if it was created as a picture, the pictorial elements became clear.

Since Audacity is an audio program rather than a midi program the opportunities for the kinds of construction, deconstruction and reconstruction that I refer to above were not as great as in Cakewalk. An unexpected result was, however, that I was able to identify visual elements and, very importantly, the rhythmic dissonances that are discussed in Chapter 6.

Individual sessions were approached in two ways; a verbatim transcription of audio and video recordings as described earlier in this chapter; and analysis of the compositions themselves. Early on in the compositional analysis I created a spreadsheet with the following headings:
• Date
• Composer
• Title
• Complete (I initially thought that completeness was an important consideration. I changed my mind during analysis when it became apparent that ‘finishing’ a piece was not important to the children)
• Notes (A very brief description of key technical features with reference to earlier pieces where appropriate)
• Type (Another early category of limited usefulness. This listed the file format of the composition. I stopped using this identifier, as it became increasingly irrelevant to my analysis)
• Session notes (Brief notes from the actual analysis that highlighted key compositional features rather than technical)
• Significant (I used ‘Y’ for ‘yes’ if there was something that I considered represented a significantly important example of a compositional, technical or other feature.) The cells were formatted to display as red when ‘Y’ was entered. This simple device assisted me to identify compositions that at the time of initial analysis I had thought were important.

As my analysis continued and I began to develop theories from the data, the idea of a typology of compositional styles emerged. As a result I added an additional type category to the spreadsheet. In this column I indicated the type of the composition according to the typology, as described in Chapter 5, that I was developing. This spreadsheet is presented in Chapter 5 as Table 5.1. All information recorded in the spreadsheet was duplicated in separate, child specific, worksheets within the spreadsheet. This spreadsheet proved to be an invaluable aid to analysis and to record keeping. In addition, although not relevant to this study, the spreadsheet provides me with an opportunity to quantify compositional types and/or features.

Detailed descriptive analysis notes were made of all compositions from each session. This analysis included both technical and musical aspects, and outlined the content and where appropriate, intent, of each piece. Screen shots from the software as well as my own transcriptions of melodic and rhythmic features were included. The compositional analysis occurred concurrently to the session transcription process.
This was difficult and time consuming but allowed for important cross checking against the session notes in order to identify events that might have contributed to the compositional process. Given that the environment is a significantly important component of my question, it was essential to ensure that analysis of compositions was not made in isolation from that environment. An example of the importance of this process to the development of deep understanding is the piece Bear, by Students L and R, which is described in detail in Chapter 6. By looking at the composition alone there would have been no way that I could have identified that the tune used in their piece was based on the John Butler (2003) song, Zebra, which they both knew. I would not have seen the interactions and musical discourse that occurred between the two boys. Similarly, in an analysis of the audio and video data without reference to the compositional analysis, the relevance of these interactions to the composition would have been lost, since much of what they did was not saved as part of their composition.

Methodological Framework

The Study as Naturalistic Inquiry

There are a number of methods used in this study that I detail below but the overarching methodological approach is that of naturalistic inquiry. This section provides a detailed discussion of naturalistic inquiry and the postpositivist paradigm based on the work of Lincoln and Guba (1985) and Guba and Lincoln (1999). It then shows how this approach is appropriate for this study and how the study can claim to be situated within the approach.

Lincoln and Guba (1985) make a detailed comparison between positivistic approaches and what they refer to “the new paradigm”, naturalistic inquiry, they say:

Where positivism is concerned with surface events or appearances, the new paradigm takes a deeper look. Where positivism is atomistic, the new paradigm is structural. Where positivism establishes meaning operationally, the new paradigm establishes meaning inferentially. Where positivism sees its central purpose to be prediction, the new paradigm is concerned with understanding. Finally, where positivism is deterministic and bent on certainty, the new paradigm is probabilistic and speculative (p. 30).
The values and motivations driving this study, the beliefs that I possess about research, the theories and ideas that arose from the study are all in accord with Lincoln and Guba’s above description of naturalistic inquiry.

The differences between positivistic approaches and the “new paradigm” were discussed previously by Harré (1981) and others; these discussions are noted by Lincoln and Guba. For Harré it is content that is important; where content has been ignored in positivist approaches it can be investigated, with all its metaphysical implications, through experience and observation within naturalistic paradigms. He suggests a process of analysis and explanation that support this approach.

Guba and Lincoln (Guba & Lincoln, 1999; Lincoln & Guba, 1985) propose five axioms of the naturalistic paradigm that apply directly to my research. Lincoln and Guba use these axioms as a means of defining naturalistic approaches and to contrast them with positivistic approaches.

This approach to research design was adopted by (Vincent, 2004, 2009) to situate his research within that paradigm. Table 3.1 sets out my application of the five axioms to my own study.

[Adapted from Lincoln and Guba (1985, pp. 37-39) and Guba and Lincoln (1999, pp. 142-144)]

<table>
<thead>
<tr>
<th>Axiom</th>
<th>Relationship to my study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: The existence of multiply constructed realities that require idiosyncratic, holistic and divergent investigation</td>
<td>A key theoretical framework for this study is that of affordance and ecological perception as detailed in Chapter 2. This approach demands an attempt at understanding of individuals’ relationships with their environment and requires an acceptance that those environments will be different for each individual; sometimes they are even perceived or imagined, but each constitutes</td>
</tr>
<tr>
<td>Axiom</td>
<td>Relationship to my study</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2: The existence of a co-dependent relationship between inquirer and</td>
<td>This study took place in a school in a classroom situation. The co-dependent relationship</td>
</tr>
<tr>
<td>“object”, between the knower and the known. An acknowledgement that</td>
<td>between teacher and student is integral to that environment. The interactive nature of</td>
</tr>
<tr>
<td>independence between subject and object is impossible. An</td>
<td>that relationship is a positive component of classrooms.</td>
</tr>
<tr>
<td>acknowledgement that the interactivity of the relationship is</td>
<td></td>
</tr>
<tr>
<td>positive</td>
<td></td>
</tr>
<tr>
<td>3: Aims to develop an idiographic body of knowledge through working</td>
<td>The experiences, understandings, relationships with environment and compositions are</td>
</tr>
<tr>
<td>hypotheses. Generalisations are not possible but some transferability</td>
<td>individual and are born from individual understandings (even when they are shared or</td>
</tr>
<tr>
<td>is. Differences are as important, or more important than similarities.</td>
<td>collaborative). This study does not seek to generalise but to inform and to seek</td>
</tr>
<tr>
<td></td>
<td>understanding, the results are not generalisable but the theories and frameworks might be applicable in other settings.</td>
</tr>
<tr>
<td>4: Causality can never be demonstrated; patterns of “plausible</td>
<td>This study attempts to interpret and explain, not to show cause. Plausible patterns are</td>
</tr>
<tr>
<td>influence” can be inferred</td>
<td>sought and inferred. Through, for example, a typology of compositional approaches (</td>
</tr>
<tr>
<td></td>
<td>Chapter 5) and an analysis and discussion of significant compositional features (</td>
</tr>
<tr>
<td></td>
<td>Chapter 6).</td>
</tr>
<tr>
<td>5: Inquiry is value-bound and those values: inquirer values,</td>
<td>This study acknowledges its value-bound nature (one of which is the choice of this</td>
</tr>
<tr>
<td>paradigm choices, theoretical choices, context values and “value-</td>
<td>methodological framework) and the values brought to it by the inquirer and the</td>
</tr>
<tr>
<td>resonant”.</td>
<td>participants. The resonance is achieved</td>
</tr>
</tbody>
</table>
The above axioms were used by Lincoln and Guba to support a description of “fourteen characteristics of operational naturalistic inquiry” (p. 39). These fourteen characteristics were later distilled into six (Guba & Lincoln, 1999). The term “positivistic” is replaced by “rationalistic” in the 1999 work. Vincent (2004) specifically applied Guba and Lincoln’s characteristics to his work. I make a similar application of the characteristics of naturalistic inquiry in Table 3.2

<table>
<thead>
<tr>
<th>Characteristics of Natural Inquiry</th>
<th>Application to my study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Research takes place in a natural setting. Realities are wholes that cannot be separated into parts. “[T]he act of observation influences what is seen” (1985, p. 39) and the context is crucial to meaning and transfer.</td>
<td>This study took place in a classroom situation with me as the teacher. Some areas of apparent artificiality occurred (small group number and time of sessions) but even those occurrences fit within the normal daily activities of a Victorian primary school. The interactions and behaviours were completely natural and common to the environment</td>
</tr>
<tr>
<td>2: Theory is more powerful when it arises from the data. Theory has been (at some time) grounded in experience</td>
<td>Even though I was guided by the Swanwick and Tillman (1986) theory of stages of musical development when I commenced study, that framework was replaced by others emerging from and grounded in the data</td>
</tr>
<tr>
<td>3: Research takes place using a human instrument in order to provide insight, flexibility and responsiveness</td>
<td>This study is a study of human interaction; interaction with other humans, with the environment and with computers (part of the environment).</td>
</tr>
<tr>
<td>Characteristics of Natural Inquiry</td>
<td>Application to my study</td>
</tr>
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<td>-------------------------</td>
</tr>
<tr>
<td><strong>4: Research takes place without a priori research design.</strong> Naturalistic inquiry anticipates research design will emerge as the study progresses</td>
<td>Even though the computer became an instrument of research (Reynolds, 2005) the study is human. I am a significant part of the research as facilitator, observer, researcher and participant.</td>
</tr>
<tr>
<td><strong>5: Research “argues for the legitimisation of tacit (intuitive, felt) knowledge in addition to propositional knowledge (knowledge expressible in language form) because often the nuances of multiple realities can only be experienced in this way:</strong> (1985, p. 40)</td>
<td>Although a qualitative methodological framework was chosen before research commenced, the specific nature of that framework, the need to investigate the children’s relationship with the environment and, for example; the role of play, were not understood until they presented themselves to me through the process of research.</td>
</tr>
<tr>
<td><strong>6: Research is typically qualitative in approach</strong></td>
<td>The nature of observation and interpretation inherent in this study rely on intuitive knowledge. This fits with the hermeneutical approach and with the use of individual case studies.</td>
</tr>
<tr>
<td>I have not identified any valuable purpose for any quantification of data in this study. Compositions are listed in a table and are typified but this is still qualitative.</td>
<td></td>
</tr>
</tbody>
</table>

Table 3.2: An application of Lincoln and Guba’s characteristics of naturalistic inquiry

**Grounding Theory**
Characteristic 2 above refers specifically to theory arising from the data; to theory being grounded in experience. The attachment to an ecological theoretical framework came not from preconceptions but directly from the data and my interpretations of it. In the same way, my theories about play, about children’s musical understanding and all other areas of this study were derived from the data (Strauss & Corbin, 1998) and accordingly situate the methodological approach within a framework of grounded theory.

When I commenced this study I had the intention of applying or testing the Swanwick and Tillman (1986) Sequence of Musical Development. This was, for me, a significantly important theoretical framework to explore. As the study progressed it became clear to me that despite the quality of Swanwick and Tillman’s work, its relevance to what was happening in my study was diminishing. I also entertained preconceptions about what kind of compositions the children would produce and about their understandings of the process of composition. These preconceptions arose from my previous research and from my background as a classroom music teacher. As the study progressed I needed to rethink these preconceptions and seek new theories to explain what was happening, and how I could interpret and situate it. Through the experience of data collection (and through the experience of the study itself) and the analysis I was able to derive theories from the data. For Corbin and Holt (2005) the data already holds the theory and it is the job of the researcher to construct that theory from it. For them an important aspect of this approach is the identification of events in the data. This is certainly the case in this study where specific incidents led to the formulation of concepts of understanding necessary to explain and interpret those events and incidents. Chapter 6 is a detailed discussion about significant musical features that were apparent in the compositions of the participants. The identification of these features and the realisation of their significance led to the development of theories about the way children perceive rhythm, melody, time and harmony in their own pieces and in the pieces of others. This then, is an example of an event in the data and how theory is constructed from it. In Chapter 5 I present a typology of compositional process that is built on play. This typology and the identification of the role on play in the compositional process is a further example of grounded theory.
A Hermeneutical Approach

The use of video/audio recordings to support my observations and experience, and my analysis of compositions and compositional processes allowed me the opportunity to stand back from the events and to make observations about them and about myself. These observations are an important part of the data itself and of the analysis. It is not possible to separate the two in the creation of the narrative or in the development of understandings. Interaction with the data is, in the Gibsonian sense, a relationship with an environment, that environment, accordingly, affords things to the organisms within it. There is a recursive nature to those interactions; me collecting data and analysing (experiencing) it by watching me collecting data and analysing (experiencing) it. My relationship with that environment affords things to me as a participant, as an observer and as a storyteller that are situated, relational and contextual. They are my reality of events (within a framework of multiple realities) and they are a way of assisting me in my discovery of Truth. In particular Truth as referred to as T₁ by Lincoln and Guba (1985), metaphysical truth.

This approach to analysis is consistent with an interpretation of a hermeneutical approach. According to Ödman and Kerdeman (1999) “the original literal meaning of the term was ‘to stand close to or under something,’ or to place something close to or under oneself, … one knows well that to which one is close” (p. 186). I was a part of the project; I was standing close to it. The interpretation of the term in this manner (or at least the acknowledgement that this interpretation exists) acknowledges the notion that in hermeneutic understanding, or the quest for understanding, there already exists a familiarity with what is being interpreted before interpretation begins. Ödman and Kerdeman discuss the traditional hermeneutic concept of familiarity as ‘preunderstanding’. In their interpretation of hermeneutics “a person to some extent has already understood that which he or she is trying to interpret” (p. 186). My professional background and my previous research provided me with knowledge about what would happen; I understood parts of the data in that I anticipated it, and when I first experienced it. I was part of the process that I am studying and interpreting, accordingly I have understandings of it; these understandings are part of the analysis. When I analyse events I am analysing something I already understand.
but I am seeking new or deeper understanding. My notion of the recursive nature of my data collection and analysis is thus supported.

Ricoeur (1991) went to considerable lengths to extend hermeneutics beyond interpretation of text. He believed that text itself could be redefined or reinterpreted to include human action. He saw a strong connection between action and discourse and described human action as a form of discourse. It is from this standpoint that I argue that a hermeneutical approach is appropriate. This attempt to extend hermeneutics beyond textual exegesis is explained by Kearney (2004) who sees Ricoeur’s approach as “not only a revision of the original project of phenomenology but of the hermeneutic tradition itself” (p. 20). While not referring directly to Ricoeur, Ödman and Kerdeman (1999) hold a similar view about the role of hermeneutics in research; they use the term “contemporary hermeneutics.” For them “the circular process of preunderstanding, understanding and interpretation describes more than a method of textual exegesis. Insofar as understanding is central to human existence, the hermeneutic circle captures how ordinary people experience and make sense of life” (p. 187).

Brown and Heggs (2005) draw parallels between contemporary hermeneutics and action research. While this study is not presented as action research (although elements of the Action Research Cycle are present) the point is still relevant. Clearly it is appropriate to use hermeneutical approaches to inform and frame social science research. The key to the hermeneutical approach is the hermeneutical circle; this cyclical reflexive process applies to action research and to this study. For Ricoeur “the philosophical task is not to close the circle, to centralise or totalise knowledge, but to keep open the irreducible plurality of discourse” (Ricoeur in Kearney, 1984, p. 27). There is no attempt in this study to close that circle, rather to draw deep understanding from it. Understanding that has “nothing to do with an immediate grasping of a foreign psychic life or with an emotional identification with a mental intention. Understanding [that] is entirely mediated by the whole of explanatory procedures that precede it and accompany it” (Ricoeur, 1991, p. 167 emphasis in original).

Ricoeur saw the hermeneutical circle as “the correlation between explanation and understanding, between understanding and explanation” (1991, p. 167). For me, in a
phenomenological sense, this circle can be expanded to include experience. In a similar way to that used by Windsor (2004) to describe the triadic relationship of affordance, the hermeneutical circle in this study became a correlation between experience, explanation and understanding, between understanding, experience and explanation. Windsor’s triadic representation of perception consists of stimulus information, environment and organism. For Windsor it is not possible to see stimulus information as affordance, or to see any of the three components as separate; “one should describe this triadic relationship itself as representing an affordance” (p. 193). The three way relationship between experience, understanding and explanation can also be represented in triadic terms where all three components of the triad become one; they can also be represented as a version of the hermeneutical circle. Given the importance I place on affordance and the ecological approach of Gibson this interpretation serves to tie the theoretical perspectives.

**Ethnographical Considerations**

Tedlock (2000) places ethnographical research into the realm of fieldwork, which, she says, “is located between the interiority of autobiography and the exteriority of cultural analysis” (p. 455).

She describes ethnography as having many forms, one such form is narrative. She describes the term, *participant observer* as oxymoronic in that it implies “simultaneous emotional involvement and objective detachment” (p. 465). She plays with the term to indicate that in ethnography it can become “observation of participation”. In the current study it became very apparent to me that my involvement was not detached, and that it was not possible to remove myself from the study. Hammersley (2002) applies the concept of the existence of multiple realities to ethnographic research. He argues that ethnographers are involved in the creation of worlds rather than their representation and says that the constructivist perspective accommodates the idea that ethnographers are involved in the production of multiple realities or versions of events and that they are “creating multiple, incommensurable worlds on the basis of the same or similar research experience” (p. 71). Again this is in accord with my study and my approaches to data, the incommensurability is the notion that each reality is different and completely subjective. This is not solipsism it
is an acknowledgement of an ontological understanding about human knowing. Hammersley proposes an ethnographical approach of subtle realism where there is a confidence about the validity of knowledge claims in which those claims “must be based on judgements about plausibility and credibility” (2002, p. 73).

In this study I have attempted to “create the world” of the classroom and to understand the world of children and childhood. Of course it is not within the scope of this study to go very far into the understanding of childhood but the attempt and focus is there and is relevant and important. Within these worlds exist (or exists) the world (or worlds) of the electronic environment and the relationship each child has with it.

This study is ethnographical in the sense that it is naturalistic, it represents normal situations in the participants’ lives (Taft, 1999). I have recorded and used data in a way that interprets its meaning.

**Case Study Approaches**

A case study methodology can be defined as “a research strategy which focuses on understanding the dynamics present within single settings” (Eisenhardt, 2002, p. 8) For Stake (2000, p. 435) it is “defined by interest in an individual case”, it is my interest in what these children do in the environment at this particular time that defines this project. That is not to say that what can be learnt from this case cannot be applied or considered in other similar cases. In my discussion about naturalistic inquiry, above, and validity, below, this point is argued in more detail. According to Stake, case studies fall into three categories. First, there are intrinsic cases that investigate solely the particular case in question. Second, instrumental cases investigate a particular case in order to generate theory or provide insight beyond the case itself. The case is studied deeply but generalisations are sought or made from that investigation. Third, collective case studies that investigate a “number of cases in order to investigate a phenomenon, population, or general condition” (Stake, 2000, p. 437). This study falls somewhere in between Stake’s first and second categories. It is instrumental in that it is interested in what can be learnt about the ways all children might perceive their own music making, the ways they understand music and the ways they interact with their environments, but it is intrinsic in that this particular
case is what is driving it. The interest and reporting is on the experiences of the case and are bound by those experiences.

In Chapter 4, I present case studies of each child in order to present and discuss their individual interactions and offerings to the study as a whole. Individual approaches to composition require individual analysis but at the same time the individuals in this study were interacting with each other, with me and with their environment. These case studies, together with the investigations of compositions and compositional process, and with the discussion about play, form a case study of the study itself.

The application of a philosophical approach to the choice of methodology resounds with Lincoln and Guba’s (2002) description of case study as the “best form for reporting on alternative paradigm research” (p. 206). For them the most important aspect of case study reporting within that paradigm is that “they provide the vicarious experience from which the reader may learn (as we do from all experience)” (p. 206).

**Working with Children**

This study is about children, their compositions and the relationship they had with their environment. As an adult observer I can only ever present my own observations, understandings and interpretations of their realities. But this is no way different from any researcher who reports on the realities of the people he or she is observing. Naturalistic inquiry acknowledges the existence of the multiple realities of life. Those realities are as similar and as different when dealing with children as they are when dealing with adults. No matter what questions I ask a child (or an adult) I will only ever get an answer that I must interpret (especially if I am to report that answer and assign meaning to it). I am not worried about presenting the ‘truth’ of those realities; I am interested in presenting my understanding through my interpretation of that truth and what that means. Thus, I refer again to Lincoln and Guba’s ‘metaphysical truth’ (1985, p. 14), which I discuss in more depth in the section on Validity later in this chapter.

A key aspect of naturalistic inquiry is that the setting is a natural one. The setting for this study was the children’s school with me, a former teacher, working with them in
a familiar and natural way. All of the interactions that occurred, occurred within that secure and familiar framework; they were there to do school activities, the fact that they were musical and playful was a bonus. I am a teacher and I am used to working with children in that relationship.

The Role of Narrative

In keeping with the hermeneutical approach discussed above, this study places great store in the narrative inquirer’s understandings of data as text. The “narrative quality” (Connelly & Clandinin, 1999, p. 135) informs the way data are represented and interpreted. In this study all events that took place in the classroom were recorded and later interpreted. That interpretation took the form of a narrative transcription that became a “cultural history” (p. 135) of those events.

My approach in this study is “the representation of experience, causality, [and] temporality” (Connelly & Clandinin, 1999, p. 139). The representation of causality in this case is only that; a representation. It is not at odds with Harré (1981) or with concerns that I have expressed earlier about attributing cause. Cause is represented, not attributed. As discussed earlier in this chapter, I adopt Ricoeur’s (1991) position that human action is a form of narrative. This interpretation of that narrative transcription can become a narrative in the telling. Thus, we have an analysis of narrative becoming the narrative itself; the hermeneutic circle reapplied.

My approach to the investigation through case study methodology, through hermeneutics, as ethnography and as naturalist inquiry leads to narrative. That narrative is told, where appropriate, as a story.

Storytelling

A naturalistic approach seeks, among other things, the discovery of inferred meaning (Lincoln & Guba, 1985). Reason and Hawkins (1988) see storytelling as part of that “emergent paradigm of inquiry” (p. 79). In keeping with Maxwell’s (2002) later typology of validity in qualitative research, they suggest that there are two paths of inquiry through storytelling; explanation and expression. For me there are similarities
between Maxwell’s descriptive validity and interpretive validity, and Reason and Hawkins’ explanation and expression. There are also significant differences. These ideas are dealt with in more detail later in this chapter, but the differences I refer to are that for Reason and Hawkins explanation and expression are a dialectic process leading to and from experience. For Maxwell descriptive and interpretive validity are complementary tellings of the same event; the former describes the event, the latter tells what it means. These ideas differ but do not contradict each other; they support my approach by strengthening understandings of my story and strengthening its methodological validity by providing multiple ways of approach and experience.

Much of the story of the data (or perhaps just the story itself) is an explanation of events. It is me engaging in information gathering, categorisation and developing a typology (Reason & Hawkins, 1988). It is a description of events and actions that lead to understanding of what happened. This description (and explanation) leads to Maxwell’s notion of theoretical validity. The engagement with the data in this way also led to the search for theoretical frameworks and the development of new theories.

The story of what happened, and the interpretations of that story, are inexorably linked. In this study, the story provides the structure for understanding the environment and the interactions within that environment, as well as providing the story of the nature of the collection of data; this story is told in Chapters 4, 5 and 6.

Validity

Issues of validity in qualitative research have been the source of much debate. This chapter does not seek to add to that debate but to present a contextual basis for the adopted methods and methodologies. The following section presents Maxwell’s (2002) typology of qualitative validity and applies it to this study.

Maxwell's Typology of Qualitative Validity
Maxwell’s (2002) typology of qualitative validity is linked to “the kinds of understanding at which qualitative research aims” (p. 39). These types of validity do not necessarily apply to all qualitative research but are “relevant to, and often implicit in, qualitative research” (p. 55). This typology is as follows:

**Descriptive Validity**
That what the researcher describes is described accurately. He adds a “secondary descriptive validity” (p. 45) that deals with things “that were inferred from other data”.

Description of events can easily be supported – an audio recording can confirm that something was said; a video recording can confirm that something happened or was done. Maxwell uses the example of a student throwing an eraser. Descriptive terms of the events that happened and the actions that took place are easily validated. their meaning, in terms of the “accuracy of the application” (p. 46), is what can be subject to dispute.

Accordingly, in my descriptions of events I have tried to indicate when I am interpreting actions or events, words or sounds. Thus I use audio and video to support my description of events and actions, and my knowledge of the participants and my own involvement in the process to make inferences that support the description.

Descriptive validity can also ‘refer to issues of omission as well as of commission” (p. 47). The idea here is that a description of an interview might not be true if it doesn’t refer to “features of the informant’s speech, such as stress and pitch”.

**Interpretive Validity**
… qualitative researchers are not concerned solely, or even primarily, with providing a valid description of the physical objects, events, and behaviours in the settings they study: they are also concerned with what these objects, events, and behaviours mean to the people engaged in and with them. In this use of the term meaning, I include intention, cognition, affect, belief, evaluation and anything else that could be encompassed by what is broadly termed the “participants’ perspective,” as well as communicative meaning in a narrower sense. This construction is ideational or mental, rather than physical, and the nature of the understanding, validity, and the threats to validity that pertain to it are significantly different from those involved in descriptive validity (p. 48 emphasis in original).
For Maxwell, interpretive reporting is an *emic* approach. That is, it is an insider’s view (Morris, Leung, Ames, & Lickel, 1999; Young, 2005) that, according to Morris et al., is one that is used by ethnographers “who strive to describe a particular culture in its own terms” (p. 781). The two approaches, *emic* and *etic*, are derived etymologically from ‘phonemic’ and ‘phonetic’, the former dealing with units of meaning, the latter with units of sound. Thus the analogy of insider and outsider is constructed. This is not the first time that the notion of insider and outsider has been raised in this study. It is presented from a different perspective in Chapter 2 in my discussion of Barlow’s (Barlow, 1990; Tunbridge, 1995) mindsets and Lankshear and colleagues’ (Bigum & Lankshear, 1998; Lankshear & Knobel, 2000) interpretation of Barlow’s ideas.

In my research I am very much the insider investigating units of meaning in search of what Lincoln and Guba (1985) refer to (and what I have referred to earlier in this chapter) as “Truth₁ (T₁)” (p. 14); metaphysical truth.

…T₁ cannot be tested for truthfulness against some external norm such as correspondence with nature, logical deductibility, or professional standards of conduct. Metaphysical beliefs must be accepted at face value…They represent the ultimate benchmarks against which *everything else* is tested, for if there were something more fundamental against which a test might be made, then that more fundamental entity would become *the* basic belief whose truth (T₁) must be taken for granted (p. 14, emphasis in original).

Lincoln and Guba go on to define paradigms as “systems of ideas” that come from sets of basic or metaphysical beliefs. Thus “paradigms represent a distillation of what we *think* about the world (but cannot prove)” (p. 15). Thus, this work becomes a system of ideas about the ways children compose and interact with their environment represented through a system of ideas about an approach to research and data.

*Theoretical Validity*
For Maxwell, theoretical validity comes out of both descriptive and interpretive forms of validity but goes beyond them in a postpositivist sense that acknowledges that there is no independence between data and the “researcher’s perspective, purposes and theoretical framework” (Maxwell, 2002, p. 52). It “explicitly addresses the theoretical constructions that the researcher brings to, or develops during, the study” (p. 50).

**Generalisability**

“Generalisability in qualitative research usually takes place through the development of a theory that makes sense of the particular persons or situations studied, but also shows how the same process, in different situations, can lead to different results. Generalisability is normally based on the assumption that this theory may be useful in making sense of similar persons or situations” (Maxwell, 2002, p. 53).

This approach to generalisability accords closely to that described above in point 5, Table 3.2. Its application to this study is presented in Table 3.3.

**Evaluative Validity**

This type of validity, according to Maxwell, is “not as central to qualitative research” as the above listed issues and accordingly, is not necessarily a feature of qualitative research. It “involves the application of an evaluative framework to the objects of the study, rather than a descriptive, interpretive or explanatory one” (p. 55). It is possible, appropriate and acceptable to conduct qualitative research that does not make evaluative decisions. The decisions in my study are interpretive rather than evaluative.

Of the five types of validity, descriptive, interpretive and theoretical validity are the ones most pertinent to my study and the ones that my study employs with greatest focus.

To establish validity Reason (1981) asks the researcher to undertake a process of self-contradiction; in this case, a discourse with myself. This discourse is carried out hermeneutically in my study. He says that “any notion of validity must concern itself both with the knower and with what is to be known: valid knowledge is a matter of relationship” (p. 241). He says that the validity is increased if there is more than one knower. There is only one knower in the presentation of my study but there are many
knowers in the creation of it, and in its narrative; not in the telling of the narrative but in its being.

The notion of self-contradiction is explained thus:

So we have to learn to think dialectically, to view reality as a process, always emerging through a self-contradictory development, always becoming; reality is neither subject nor object, it is both wholly independent of me and wholly dependent on me (p.241).

This idea of self-contradiction and the notion that reality is neither subject nor object is of great interest for a two significant reasons. First, it connects strongly with the hermeneutical process that I have described above. The self-contradiction, or self-discourse (note that this is not a monologue); the process of preunderstanding, understanding and interpretation is the hermeneutic circle. Second, the subject/object dichotomy is non-existent in the same way as in the Gibsonian sense (Gibson 1979; Heft 1989). The parallels to affordance are exact; the words used are the same. The only thing different is the topic. So we have Reason discussing reality as being neither subject nor object, as being “wholly independent” and “wholly dependent” on the researcher. In exactly the same way affordance is described as being neither subject nor object (while also being both), as being part of the environment and part of the organism at the same time. To me these parallels are very powerful and bind two theoretical frameworks; one methodological, the other philosophical, and strengthen both the integrity and the validity of my work.

Trustworthiness

In their attempt to compare naturalistic inquiry to rationalistic inquiry, Guba and Lincoln (1999) describe naturalistic counterparts to the measures applied in a rationalistic approach. The rationalistic approach uses “internal and external validity, reliability, and objectivity” (p. 147). Guba and Lincoln propose in their stead; “(respectively) credibility, transferability, dependability, and confirmability”. I am mindful of the apparent contradiction here, in light of the above section about validity. There is no contradiction in that Maxwell’s ideas of validity are ideas for qualitative research. Naturalistic inquiry is primarily qualitative in approach. The presentation of
validity does not contradict Guba and Lincoln; it serves to strengthen their ideas and my methodological understandings.

In their earlier work, Lincoln and Guba (1985) provided more detailed descriptions of the four measures of trustworthiness. Their earlier descriptions were built upon an articulation of what they saw as the key issues that produced the four measures. They used the terms, “truth value, applicability, consistency, and neutrality” (pp. 294-299) to provide a framework for their four measures of trustworthiness. In the following section, I will briefly present these measures and attempt to demonstrate how my study applies these measures.

**Credibility**

This measure is built on the notion of truth value. Their argument is that rationalistic approaches investigate “a single, tangible reality” (Lincoln & Guba, 1985, p. 294). I have already described how this study is concerned with the individual and multiple realities of everyone concerned. If it is accepted, as I accept, that “reality is now a multiple set of mental constructions” (p. 295) all created by humans and existing in the minds of humans, the prospect of reporting a single reality becomes impossible. Since a single truth cannot be produced the naturalist research must be shown to be credible.

**Transferability**

Transferability in naturalistic inquiry is aligned with external validity in rationalistic approaches. In the naturalistic approach external validity cannot be achieved since the collection of data cannot be replicated; at least not in exactly the same way. According to Lincoln and Guba (1985) it is “not the naturalist’s task to provide an index of transferability; it is his or her responsibility to provide the data base that makes transferability judgements possible on the part of the potential appliers” (p. 316, emphasis in original). They (Guba & Lincoln, 1999) call for a thick description of the study to “provide a vicarious experience of it, and to facilitate judgements about the extent to which working hypotheses from that context might be transferable to a second, similar context” (p. 148). In the current study this is what is attempted; the descriptions and interpretations of events are thick and are clearly linked to theory.
The study is built upon the acknowledgement of the relationship children have with the worlds of their environment, and about an acknowledgement of the ways in which children interact with music. These foundations of the study, and the methodological frameworks described in this chapter, set the tone of the research. This thesis provides that “vicarious experience” through its narrative description, the data base for transferability judgements is provided through that description and the theoretical frameworks. The study does not attempt to hypothesise or guess about what might have happened with different children, with a different researcher or with different tasks; it is the role of future researchers to attempt to provide those answers.

**Dependability**

Dependability is concerned with issues of instability factors (of the researcher) in the design (of the research). To establish the dependability of research these factors need to be addressed. In a single researcher study such as this it is not possible to use the method of splitting the research into two teams as proposed by Lincoln and Guba (1985). Their second method of an inquiry audit is more appropriate and can be applied to this study. Through the use of two research supervisors, each with specific areas of expertise and with commonality of expertise across areas, the factors of researcher instability and design errors were dealt with. In addition to the monitoring of the researcher and the research design carried out by my two supervisors, the publication and presentation of the research through peer review processes provided a further level of an inquiry audit.

**Confirmability**

Confirmability refers to the data; can they be confirmed? In this study confirmability is dealt with through the previous criteria, in particular through its credibility with specific reference to triangulation, peer debriefing and referential adequacy. Further to these areas, the suggested audit trail, in which data can be accessed and confirmed, is also supported by the stringent ethics restrictions applied to this study by my university. The mass of raw data in the form of audio and video recording and children’s musical compositions in their original file formats exist and are accessible; as are the detailed analysis and the annotated transcriptions of all sessions. Of course the analysis and the inferences from that analysis cannot be replicated given the
nature of this study, but the data can be accessed in their original recorded forms. All data have been filed and sequenced electronically to make access very easy.

**Summary**

In this chapter I have presented both the methods and the methodology of this study. I have explained the setting and the participants and created a context for the project. By defining terms and by describing the software environment I have also established the language of this study. Significantly, I have outlined my understandings of a hermeneutic approach to data. This approach fits well with my discussion about Gibson’s ecological approach and to my interactions and interpretations of data. Furthermore, it established a context for the writing style of this whole work. The role of narrative as data and to tell the story of the data fits well within the hermeneutic approach.

By describing this study as naturalistic inquiry I have set its approach to data collection and analysis as qualitative. The investigation and description of events through a case study supports this approach. The style and nature of the case study is set firmly within the methodology as described.

In the following chapters I will present the discussion and analysis of data according to my methods and my methodological frameworks.
Chapter 4

Case Study

Introduction

The forms we call art and science, rite and ritual, not only provide schemata through which we experience the world, they also are the forms through which we represent it. We have a strong tendency, I think, to regard these forms as if they had a life independent of their makers (Eisner, 1988, p. 16)

This chapter presents an overview of the study with particular emphasis on the day to day activities and interactions. Importantly I also present the problems that occurred during sessions. Often these problems were technical and serve to highlight the difficulties I faced and the commitment and resilience of my participants. These technical issues are not uncommon in schools and also provide a snapshot of computer use and access in the school in question. It is worth noting that this school, in response to government funding guidelines had recently moved away from providing its own technical support and had, like many other schools, engaged a specialist technical support organisation from a list of approved providers. In an attempt at economies of scale these providers design and install a common image that is designed to ‘protect’ the computers from unwanted interference by children, from access to system files, from attack by virus, from the installation of non-approved software and from any other real or perceived issues of safety, integrity and security. The result is computers that bear very little resemblance to the computers that the children would see at home.

The computers at the school in the study provided no access to ‘my documents’ and a very convoluted access to individual student files. Many programs have a default save to ‘my documents’ and this default had not been altered. Cakewalk default saves to its own folders and altering that proved very difficult for a person without administrator access.
The presentation of these and other issues also provides an insight into my frustrations as a researcher and teacher, and the humour that pervaded just about everything in the study. These children were having fun and that fun comes through time and time again. There is also something delightful about the way children perceive, interact and engage; hopefully that delight is conveyed here.

The second part of this chapter is the presentation of individual stories of each child. These stories are brief but important. They are written using responses to two formal interviews; one before the compositional activities commences and one after they concluded. They also draw on individual events throughout the study, where appropriate describing compositional approaches and preferences, and my interpretations of what the events and interactions mean.

It is in this chapter that I make specific connections to the affordances of the environment. These connections appear in other sections of this work, in particular in Chapters 4 and 5 but it is here that I draw specific attention to them and their significance.

It is also appropriate at this point to discuss the levels of understanding that the children had of the word ‘composition’. I raise this issue in each of the individual stories presented later in this chapter but wish to highlight it here.

**Day to Day Events**

Sessions began with the children arriving at different times. Usually there would be three or four there ready to start and they would assist me with setting up. As children arrived prior to the beginning of the session they would sit at a computer and begin to play with what work they could find from the previous week or sit and talk to each other. To begin a session I would make sure that the camera was in place and filming, get them all seated in a semi-circle, turn on the MD recorder and tell them the things that I hoped that they would do today. These introductory comments lasted about five minutes and usually involved me trying to get them to focus on something, either technology based or composition based. The children became bored very quickly and just wanted to get to work on their composing.
The following transcriptions present two typical introductions. In one the girls have decided to play a little game that involves the raising of their gas lift chairs to their highest position and then the slow release and lowering of the chairs:

The girls are sitting in a row behind me. K adjusts her chair height; she is now higher than the others, C raises hers, K responds by lowering hers as far as it will go. They smile. C lowers hers and Na raises hers. I now have a gentle wave of chairs going on behind me.

(1.57) I attempt to show the students where I have put some sound files for their use. I am using R’s computer to demonstrate – this is the first time that I have seen a student view of the school’s computers. I am astounded and almost defeated – there is no desktop and no access to files except through my documents or through a very odd and counter intuitive route. The system is set up for use of Microsoft Office and very little else. We spend some time trying to find it – A seems to know a way though the maze.

Two minutes later and I still haven’t been able to find the files. The children are getting bored

The only files I could find opened Media Player – A thought that was cool because that’s “where you get songs from the Internet”

N has seen something on the screen and starts singing ‘What About Me?’

The girls have started their chair game again – swinging around on them and going up and down, trying to be at the same height. C has started a conversation. I can’t make it out because she is talking quietly and A is loudly trying to plug his computer into the wall socket.

(16th March)

The second involves Students R and L engaging in some banter and Student L displaying many signs of abject boredom:

I’ve had problems starting – technical problems so I’m running late. As I turn on the camera and MD A tells me that he and N have to leave at 9.00am for Wise Ones (a school extra curricula activity)
They are all sitting in a semicircle facing me

I: I’m a little concerned about where we’re going in this project. Especially with the guys. Last week we had a really good session with the girls and got a lot done. It’s not because girls are better composers or anything like that

R has started to fiddle with another chair, N is yawning and L is playing with his lips; they are all trying to listen but I can see they are getting quickly distracted.

I: It’s because they listen and they actually try to do the things I ask them to do

R is now staring at his outstretched arm making a dropping action with his hand. L is fiddling with his chair trying to get his legs up on it. N is slouched and A is swinging his chair from side to side – I should be noting this

I: So I really want you boys to try and do the same thing. We’ve had a lot of problems at the start

L is now making monkey faces; opening and closing his mouth with his lips over his teeth

I: We’ve also had a lot of … mucking around. Not that mucking can’t be okay because you often learn by playing stuff and just testing stuff but that’s fine, but it’s time that we actually focus on what we’re here to do

[1.31]
L now has both feet on his chair and both hands on the chair back (he is sitting the wrong way). He is now playing at driving a car. The boys are all looking a little crestfallen and there is nothing disruptive in their actions

(24th August)
Apart from the computers frequently not working properly, there were many other interruptions and distractions that occurred. One such distraction was the use of loud music played before the school bell to prepare children for the start of the day or the end of play time. Since the current study took place before the commencement of school and ran into the first period the play in music was a regular feature of the sessions. At times the music was so loud that it made transcription of audio impossible. At other times the children danced or ‘grooved’ along to it, sometimes choosing to record it as part of their compositions. The music blared for approximately three minutes each session. At times I climbed onto a computer table and turned it down, at other times I just tried to ignore it and carry on regardless.

Student K, in her piece *KSounds*, recorded Johnny B Goode as it blasted through the Public Address system. The following transcription from 16th March provides my thoughts of what happened:

[23.05]

  The play in music starts really loudly it is ‘Johnny Be Good’
  I: I suggest you don’t record right now.

  N: Record it

    (First N, then L and finally K all hold up the microphones and start recording. R and N are really bopping along – I can’t hear anything except the music. I keep trying to help C and Na save)

  K is very pleased with what she has got and stops recording

[24.05]

  C and Na don’t seem to be too bothered by the music and continue to make notes. K comes over to have a chat.

    L grabs a computer speaker and puts it to his ear in an attempt to listen to his work.
N is still recording Johnny Be Good – he really likes the guitar riff in the bridge [24.33]

[24.43]
N starts to ‘sing’ along – he is making guitar sounds and recording them.

C is trying to ask me something, she is shouting but I can’t hear her.

[25.36]
The music stops! There is still a lot of noise because the children have had to turn up their speakers very loud in order to hear what they are doing. I have no idea what they have done to include the music or what their work will sound like.
(16\textsuperscript{th} March)

My audio recordings also frequently contain the background chatter of people using the library as well as the instruction and direction from other teachers. In one instance we had to put up with workmen:

There are repair men in the room now working on the heater. In the background there is a loud whooshing noise as they blow through a pipe and loud tapping. A and N are talking about football; I stop them.
[31.03] A power drill starts. Everything becomes inaudible except for some discussion about football

I connect R to the drum sounds and demonstrate some sounds for him. He gets very excited about them all. I find it very difficult to get him thinking about actually making a rhythm rather than just sounds
(10\textsuperscript{th} August)

The study took place in a computer lab at one end of the school’s library. Even though there were no classes meant to be timetabled during the time allocated for the study, classes frequently came in to use the space. Most often it was small groups of children
working with a teacher on some remedial mathematics. Sometimes children came in to use the library to read or collect and return books. The sound of the library box opening and closing appears frequently in the audio recordings. On two occasions a whole class came in to use the computers; on one of these occasions my participants had to huddle together while the class did what they could, on the other occasion I was able to continue without too much interruption.

There are many such examples that could be included here. I mention these not to complain or to elicit sympathy, rather to highlight that this study was just another event in the normal school life of the participants.

**Affordances**

Given the nature of affordance as defined in Chapter 2, all affordances can only be seen relative to the organism. What I present here as affordances of the environment are only my perceptions of the realities of the children. There were many examples of the children responding in unexpected ways to the environment and to them seeing something that I had not seen. One example that appeared to be a common experience (there are examples of the children discovering this separately yet still responding in the same way) was when they tried to export files to .mp3 format. The discussion about converting to .mp3 needs to be prefaced with a brief explanation about why this was important; this, too, involves another apparent affordance of the environment.

**Media Player**

The children had a perception of Windows Media Player as something that was quite different from what I would have imagined. They saw this application, which to me is little more than a vehicle for playing and cataloguing media files, as some sort of place or entity. These notions started coming to my attention on the 27th July. The following transcription indicates something about Student A’s innocent understanding or expectations of Media Player. It is almost as if the songs are already there; you don’t have to do anything to get them:

R: [3:38] Mr Reynolds, how can I get mp3 sounds?
I: You just import them into a …
R: But where do I get them?
A: It’s easy Mr Reynolds, you just go into Media Player, you click on the song that’s playing and you export it to file or whatever. And it saves a song
I: Yeah that’s if you’ve got the song. This is if you want to import it into Home Studio
(27th July)

Student N refers to getting a piece of music from Media Player (10th August). His apparent understanding is that it is a place that supplies music.

Students L and R get very excited in the following transcription when they manage to play one of their pieces in Media Player:

L and R are trying to get their mp3 mixdown to play. They are getting very excited

[41.37]
L: Yeah!
R: It’s playing in Media Player!
(31st August)

My notes at the time show how significant I thought it was

***Again this is important. The boys are really excited about what they have done but not so much about the music, more about the mixing process and now the fact that their piece opens in Media Player – an application that they see as being reserved for ‘real’ music. All of a sudden their music has been legitimised***

R comes running over to share his news with the others

[42.10]
R: A, Ours is on Media Player
A really interesting insight into perception of the environment. R thinks that they have ‘put it on’ Media Player. A and N have the same opinion and are very interested in it.

After this little exchange Student N gets very excited at the prospect of putting things on Media Player because then, “everyone in the school can listen”. The fact that they could listen without it being on Media Player doesn’t occur to him.

This perception is apparent again a week later (7th Sep) when Students A and N find one of their pieces ‘on’ Media Player:

N spots their track ‘Heavy Metal’ they excitedly set about getting it and playing it

[6.30]
A (very excited): We’re live N
He is referring to the fact that their song is ‘on’ media player. I’m not sure what they think that actually means and didn’t get the opportunity to ask them but it has a great deal of significance to the boys

N: the cookies!
A: Yes, that’s what we were called, the Cookies

So I have presented a perception that (in the above examples) the boys had about what Media Player is and what it means; this perception was not restricted to the boys. On the 14th September, Student C asks me to help her get their music “on the thing” (meaning Media Player). Later in that session I ask them if they want to export to mp3:

I: Do you want to export it as mp3?
K and C: Yeah
K: On Media Player
To the children ‘being on Media Player’ provided a level of legitimisation that they had not previously even considered with their music. Beyond that, it also presented them with the need to create bands, albums, titles and genres. This affordance was very powerful for the boys, who became inspired to make albums over the last few weeks of the study. The girls too experienced this and they created their own albums and artists; all afforded by being on Media Player.

**Track Properties**

The whole notion of making albums appeared when Students A and N wanted to get something ‘on’ Media Player. When exporting to mp3 from *Audacity* a dialogue box appears asking that track information be entered. The mp3 format holds track information as metadata that allows it to be easily recognised and categorised by software such as Media Player. When the boys first saw this dialogue box they were compelled to fill it in. They were compelled to create a band name, a track name, comments about the track, an album name and, amongst other things, the genre of the piece. They were afforded the status of recording artists.

This had a significant impact on what the children did. The following figures present titles from all of the children.

Figure 4.1 shows the properties for Students L and R’s 10th *Song*. They have indicated the album name, *Who Knows*, as well as the track number and their comment that this is the ‘last song ever’.
Figure 4.1: Properties for 10th Song

Figure 4.2 shows Students L and R’s pride at the length of this piece. The properties show that it is part of the *Who Knows* album and is of the funk genre

Figure 4.2: Properties for *bingo*
Figure 4.3 indicates that Student L and R’s piece *Who Knows* is grunge. The comment ‘try and figer this out’ is made because the audio in this track was reversed so that the song, *Drunken Sailor*, plays backwards.

![Properties for *Who Knows*](image)

**Figure 4.3: Properties for *Who Knows***

Figure 4.4 is the properties window for Students A and N’s *Heavy Wang* piece. It belongs to their album *Dead Rock* and they have included their band name, *The Cookies*, to add to the information along with the comment about this piece being ‘deadly’
Figure 4.4: Properties for *Heavy Wang*

Figure 4.5 shows how Students A and N had decided that they needed a second album, *The Cookies Live*. It is interesting to note that this piece is described as ‘the best ever’.
Figure 4.5: Properties for *The Big Bite*

Figure 4.6, Figure 4.7 and Figure 4.8 show how Students C, K and Na represented their pieces. Student K converted their work into mp3 format and decided the details. In these examples each piece is from a different album and a different artist.
Figure 4.6: Properties for *Fairy Wonderland*

![Properties window for *Fairy Wonderland*]

Figure 4.7: Properties for *Christmas2*
Drawing Tools

One remarkable example of affordance was the use of the drawing tools to draw their compositions. These tools are not designed as picture drawing tools but the icons used to depict them are very similar to those used in graphics programs as shown in Figure 4.9 and Figure 4.10. Figure 4.11 shows the Cakewalk drawing tools.
The drawing tools in *Cakewalk* have a number of specific functions that the children were not aware of. The pencil tool is designed to allow very fine changes to be made to notes in both the piano roll and staff roll views. The pencil is also used to add notes and rests in those views. The eraser tool likewise is used to remove notes. Located between the pencil tool and the eraser tool there is what appears to be a paint brush icon. This tool, the pattern brush, is used to ‘paint’ in pre-programmed drum patterns. In a wonderful example of affordance, the children perceived these tools to have functions for which they were not designed, the children in this study decided that the tools could be used for ‘drawing’ music.

As with many significant moments the discovery of the tools and their experimental use was somewhat serendipitous. I had shown the children that they could paint drum patterns, rather than try to play them in. The importance of this feature was not fully appreciated by the children but their attention was drawn to the drawing tools. Student
C was interested in those tools and had tried somewhat unsuccessfully to paint some drum patterns (and I think some pictures). The following conversation (from 15th June) highlights her perceptions of the tools and her understanding of their purpose:

C: Hey Na, why don’t we draw a picture using this (pattern brush) and see what it plays like. Do you want to do that? I’m drawing a whole heap of things and then I’m going to do some more pictures. Oh God [38.18]

C, in her conversation with Na now wants to rub something out (she is still drawing pictures) [39.32]

C: What’s the difference between that thing and that thing (pointing to the drawing icons)?
I: This is the eraser and that’s the pencil
C: Yeah, sorry between that pencil and the brush?
I: This brush will brush on the whole patterns of drum sounds that we’ve already chosen. The pencil will do individual notes.
C: Oh, that’s why I couldn’t … (to herself) so this will brush the sounds

R is calling me. He has ‘sort of’ finished but has ‘bits of jumbled up sort of music’.

C: Am I allowed to draw a face and see what it plays?
I: You can try and draw a face and see what it plays but you’ll have to change it from here. [40.25]

I: Anyway see if you can draw a face

Her comments to herself about ‘brushing’ sounds are of interest but I did not have the opportunity to revisit that idea with her at a later time. I provide a detailed analysis of
Student C’s Little Princess composition (the resultant composition from this approach) in Chapter 6.

The conversation that followed listening to that piece is presented below. In it Student C articulates, with prompting from me, how the environment afforded the drawing of that and other compositions.

I: That was the best one, wasn’t it?
[9.41]
C: Yeah
I: It actually worked. You were really surprised when you did that. It was like, ‘oh wow’. I was pretty surprised too. Did you do many others?

[10.00]
C: I did that and then I tried to do the other one and that didn’t work. With the palm trees and the waves and other stuff.
I: R did Titanic and it worked, kind of
C: Yeah
I: But it was just too hard. It wasn’t right
C: Yeah
I: So you gave up on that and just went for sounds again
[10.21]
C: Yep
I: So the drawing of the girl was just something you saw and thought ‘I can do that’ and then it worked
[10.27]
C: I just felt like trying it out and yeah
(1st Dec)
The idea that she realised that she could do something and ‘just felt like trying it out’ is a clear example of her perceived affordance and her relationship with the environment. This notion had been presented by Student C earlier in the same interview. She saw the opportunity and “just drew it”

I: What about when you drew the little girl?
(Thinks)

[8.32]

C: Oh, I just drew it, I didn’t like …

**Individual Stories**

In this section I present each child. Preceding these stories I present some numerical data about the compositions in total and the individual contributions. In the presentation of the children’s work in this manner it is only ever possible to present one aspect of the whole story. The current study is qualitative in its methodology and in its methods, the presentation of numbers of compositions composed and how many were of one type and how many were of another does not add to the depth of the analysis or of the understanding but it does give a feel for the tendencies and stylistic choices. As I discuss in the chapter dealing with my typology of compositional approaches the typifying of compositions is somewhat inexact and at times my placing a composition into one category over another is a decision based on convenience and the emphasis of one feature over another. A case in point is the difference between ‘sound’ and ‘genre’. There are a number of compositions that feature reference to *Smoke on the Water* by Deep Purple. I have deliberately placed some of those into the ‘genre’ category and others into the ‘sound’ category.

Within the stories below I mention the children’s stated beliefs about whether or not what they did in this study was music. I do this not in any attempt to prove anything or to draw conclusions about the merit of what they did. It is to me another example of how children view their world differently to adults. It is an example of children not understanding language and the metaphors of language in the ways we sometimes use them. It is an example of the child’s own use of the metaphor of play. I do not think that it was important to them (I doubt if they even considered it) during their compositional process. These insights are important to music educators and researchers because of all the reasons I have provided above; they provide another glimpse into the world of the child.
Visual Representation of Compositional Approaches

I present compositional data now in chart form in order to assist understanding by providing a visual representation in a simple form of very complex data and analysis. I also present it to illustrate the variety, range and number of compositions, the collaborations (and how they affected approach), the individual contributions, and any enduring stylistic choices. Presentation in this form also assists in illustrating how I was able to reduce series of compositions into more manageable numbers and the specific number of compositions that are referred to throughout the current study. It needs to be stated that a purely numerical accounting of compositions and compositional approaches will always be inaccurate. It will only show how many not how detailed, how complete or how long was spent. In the same way that it is not possible to measure anything but quantity of output by comparing the number of symphonies written by Haydn, Mozart, Beethoven or Brahms; a chart representing this output would achieve very little. In the current study, for example, Student Na produced six versions of *Project*, nine versions of *Dragon* and seven versions of *Blue*. Many of these versions were identical, yet they appear as individual compositional files. There are many examples of this in the 261 compositional files that I collected, categorised and analysed. Even in the reduced chart of 106 files that I present, there is plenty of room for interpretation and reinterpretation; I could go through that list again and add some and remove others each time I chose to do so.

The presentation of compositions according to compositional approaches is also somewhat misleading when shown purely numerically. There are many examples of multiple approaches but I have chosen to represent each composition as being *mainly* one approach. I am mindful of the risk of presenting data in this manner and the temptation that some cause may be attributed through its interpretation. Nothing in this work is causally represented.

In the current study I treat cause in the manner that it is treated by Harré in that cause in an event is identified …

*by its temporal priority to a later event and by the statistical fact that events of that type regularly precede events of the type identified as events…to say something caused something*
else, is only to say that an event of a certain sort regularly precedes and event of the kind to be explained” (Harré, 1981, p. 14).

Harré’s point is that causality is really quite meaningless when applied to humans. Causal explanations can really only explain single events related to other single events that regularly occur. Accordingly, any causal explanation can at best only be individually explained.

Despite the limitations of such presentation I proceed with it because it is interesting, it presents an easy to understand visual guide, it hints at possible favoured approaches by individual children and it highlights the range and variety of compositions and compositional approaches used by the children in this study.

In Figure 4.12 I present an overview of all 261 compositions by approach according to the typology presented in Chapter 5.

![Figure 4.12: The 261 compositional files sorted according to type of approach](image-url)
It is apparent in Figure 4.12 that ‘Look’ was the most used approach. This becomes less apparent when compared to a reduced version of the compositions. Figure 4.13 indicates that it is possible that there were more saved versions of ‘Look’ compositions than there were of other approaches. Melody and Sound have assumed more dominant positions.

![Bar Chart: All Reduced Compositions by Approach](image)

**Figure 4.13: The 106 ‘reduced’ compositional files sorted into type of approach**

Individual students demonstrated favoured approaches but this became more difficult to represent when they worked collaboratively. I provide figures at the beginning of each child’s story to represent that child’s approaches individually and in their various collaborations. I stress here that such representation is at best indicative of one interpretation of the way they were working. I believe it assists in gaining an understanding of that child, nothing more.
Student A

![Graph: Student A's compositional approaches]

Figure 4.14: Student A’s compositional approaches

Student A is in Grade 6, he is eleven years old and will turn twelve soon. A rather serious and apparently diligent student, Student A is confident about his academic ability across a number of curriculum areas. He enjoys reading and appears to be reading at a high level. He doesn’t think that he is a very good writer though but has attended extension activities in Maths. He describes Science and Art (in particular drawing and model making) as his favourite subjects and quite confidently announced that he wants to be an industrial designer (I did not ask any of the students about their employment plans). He is also quite sporting and loves playing tennis, which he says he is good at. This is a non-school activity.

He has a guitar that he got for Christmas at the end of the previous year. He has lessons but didn’t provide any information about what he learnt, he did say that he practiced four times a week. He also commented (when asked if he listened to classical music) that he could “play a classic Williams’ song” on guitar. I did not probe further into what that actually meant. Given that this interview took place in February, he had probably had three or four lessons on guitar at the time of the interview. His sister learns the keyboard and his dad has a guitar but the strings are
broken. I discovered at the end of the study that he had given up guitar because he wasn’t particularly enjoying it. It appears that he was not learning enough about music, rather just the sounds he could make.

As with all of the participants at the beginning of the study, Student A did not have a clear understanding of what I meant when I used the term ‘composition’.

I: Have you ever made up, composed any music
A: No
I: No
[1:18]
A: Composed music onto CDs?
I: What do you mean?
A: Like copying CDs, I’ve done that sort of composing but I haven’t made up any music (17th Feb)

Here is an intelligent and confident young person who is trying to answer my question to the best of his ability. He has an understanding of the word ‘composing’ that is different from the definition that I am applying.

Student A was the only participant to ever express concern about the quality of the work that they were producing in terms of its relationship to music that was commercially available. This concern was only raised once during the sessions and then again in his final interview. He was worried both times at his lack of ability to play the keyboard, which in turn meant that he couldn’t actually play a sustained, accurate piece. In the following transcription Student A expresses his concerns. It is also of interest contextually in that it demonstrates how the other students don’t share Student A’s concerns. It also presents one of my failed attempts to formalise the musical approaches of the children:

I: What we’re here to do is to try and make up some pieces of music

[1.37]
A: But we don’t know how to play a keyboard
I: Ah but that’s the task that you have to sort out. If you don’t know how to
play a keyboard, what are you going to do?
L: (I’m not sure what he says but it sounds like) Giant
A: You can’t
R: Bit of both
L starts making keyboard playing gestures on his chair back and
singing accompanying sounds

I: Okay, well what are you trying to do on the keyboard?
[1.51]
N: Make a song
R: Play a sound
I: Make a song, and what is a song?
[1.55]
A: Where it all goes in tune and it …
L: Music
A: … and it sounds right and it doesn’t have any mistakes and …
I: The mistakes is easy to fix because in this program you can go through and
you can do one little bit and you can say, okay that’s good, and then you can
do another little bit and then put it together
A: Yeah but …
N: A big song (He and L are staring to move around on their chairs and are
really over this discussion
A: You play (indistinguishable) unless it sounds good. [2.16] It’s either all
repetitive; it’s never a song that just goes on all differently or in tune …

This is very significant. A is articulating a serious concern he has about what
he is doing. He is trying to make something that he can relate to as ‘a song’
but doesn’t have the technical musical skill. The others don’t seem too worried
about it

I: Right well what I’m going to do with you guys today
L: And girl
I: Yes well Na knows what I’m going to do as I have already started with her.
So what I’m going to do – tell you guys to do – is something completely new
today. Whatever you’ve done in the past you can forget about it for today; you
may be able to revisit it later but what I’m going to do today is I’m going to
get you to write a piece of music

[2.52]
A: Write? (He sounds concerned)
I: Yes on this stuff (points to equipment). I want you to think about something.
Remember when I was here teaching you music and we used to make up a
whole lot of music
R: Yeah
I: and we’d get four people
R: On the xylophone
I: And you’d get an instrument each and you’d write it with pictures or you’d
talk to each other and make sounds; right?

There are still a lot of glazed expressions; the boys are swinging on
their seats or playing with the seat next to them

R: Yes
L: No
R: We used the xylophone
I: Yes. What I want you to think about is the idea that you’ve got 4 musicians
in your band except they’re on the computer

R starts whispering to himself with a smile on his face. He gets L’s
attention and tells him something. I am talking to A

I: So if you’re having trouble A trying to make a song, think about some other
thing that music can be. Try to think very simply. Sometimes 2 notes (I sing
two notes a tone apart in a repeated pattern) can make a song

L picks up on my ‘tune’ and carries it on
A: Yeah but that’s just all that you made and …

***A looks very worried. He is having trouble with the idea of writing music when he knows that he can’t actually play the things he needs to play to make a song. He can’t accept that what he produces is any good – especially when compared to what he hears commercially***

I: Then you can work out how to make it interesting. If you start very simply you can add things, but if you try to start at the very, very hardest then it becomes very frustrating

I: Now what I’m going to ask you to do is to write a piece of music that is no longer than 30 secs

L: Really? (He is now making faces to himself)

A: But all my stuff is less than 30 seconds (he sounds very disappointed)

I: That’s alright, it could be 20 secs

N: Me and A have only got 5 minutes

I: I know. Oh dear, I want to give up right now. Never mind. Log in let’s see what we can get happening

They start getting themselves ready.

(24th August)

These concerns of A’s were not raised again throughout the study. He apparently got over them or chose to immerse himself in what he could do, rather than what he couldn’t. He continued to attend sessions every week and continued to show evidence of having a great time when he did. He also expressed much satisfaction about the works that he (and he and Student N) composed.

In his final interview, Student A repeated his concerns about not being able to play the keyboard so even though he didn’t let it worry him throughout the sessions, the idea
had never completely left him. When I asked him about things he didn’t like he refers to the moment in the preceding transcription when I asked them to write something:

I: What did you not like? Was there anything you didn’t like about what we did, anything frustrating?

There is a long pause while A thinks

[6.43]
A: Ooh, just like the thing when you said ‘try to make something’ and I don’t know how to play the piano, it’s just hard to ‘make something’ but then when you … add things to it, it starts to sound a bit better. It’s just like playing it because I don’t play piano so it seems harder

I: So the first half of the things we did was all based around the piano wasn’t it?
A: Yeah
I: So that was too hard?

[7.09]
A: That was just hard playing the piano ‘cause it never sounded right, yeah.
(1st December)

Despite taking a serious approach to his music making there is plenty of evidence of A having a great time and engaging in the play behaviour that is central to this study.

Student A displayed an inherent musicality that was represented most often by his frequent and sustained signing. He showed no inhibition when singing, it was almost an unconscious act; he wasn’t singing for an audience, just responding to events or stimuli with his voice.

I present a detailed description of one of his ‘songs’ in the chapter on significant features. In that example A is singing a tune with words that are the notes of a scale; a
different scale to the tune he is singing. In the following transcription there are two
instances of him responding vocally to computer generated noises that were incidental
to the session, not part of his music making:

There is a constant beep in the background from one of the computers.
A starts singing the same pitch in an imitation

[16.06]
He manages to plug his synth in
I: Still no power?
Again the driver hasn’t loaded

[16.25]
R: A, A, A I’ve just found the two most coolest keys
He passes his headphones to A – A moves away
R: A listen to this
A moves over to listen he is singing Hickory, Dickory Dock

A (listens): Is that nuts and bolts?
R: It’s not, I just found it, I just turned this up (points to a button on the
keyboard) listen.
A: (has moved away) I know I heard it.

He is now singing the same notes as the computer USB connection
notes – C-G, G-C (1st June)

This is typical of Student A and his singing is noticeable in the background in many
sessions.

Student A expressed some interesting and well considered responses (and the reasons
for those responses) when I asked him about the pieces that he (and he and N) had
written:

I: Do you think that anything you wrote could be described as music?
A: Ah, music is like something that like goes on the radio and has a tune and all that. We never had anything that had like a chorus and a tune, we never had anything that had words or anything, so I wouldn’t say we had a piece of music. We had a lot of (thinks) … things.

I: So you didn’t write any songs?

A: No we didn’t have any music and it didn’t have like … Because it was pretty hard to play something ’cause then you’d have to go back to that and then you’d have to try and make up something on the way. If I’d been learning piano I could have got something out of my head and then played that and then made up our own chorus and then gone back and played that again. It would have been a lot easier if I had had experience on a piano than not.

I: But you guys didn’t even try to make up a chorus. You know those ones when I said ‘Okay, let’s break it up and let’s add something else’, you were just happy with what you got?
A: Yeah
I: Was that music? Was what we did a couple of years ago music?

A: Yeah that’s music. If you go to music lessons you’re going to make something but you couldn’t put it on CD
I (laughs): No
A (laughs): No
I: Well you could but no one would buy it or listen to it
A: They’d go ‘that’s not music, that’s just some kids’ [10.50] (1st December)

This acknowledgement that something that is done in music class has to be, by default, music is very interesting. Unlike the other children, Student A could not be convinced that what they had created was, in fact, music.
In his final interview he noted that he was not happy with the process of composing with the drawing tools (even though he was happy with *A is mad no* at the time of its composition). In a very succinct and insightful analysis of Student C’s piece he describes why her piece worked and the others didn’t:

I: How did you find working in drawings?

[5.50]

A: Oh that was hard because it sounded really bad, but …

I: Looked good but sounded bad?

A: Yeah you could draw something and then it would go something like…

(Makes a series of very short and rapidly descending sounds) and sound really bad.

I: Yeah everyone got really excited about drawing and then

A: It sounds shocking. Like R did that whole boat crashing and it sounded … yeah

I: But C’s first one, the little girl, sounded really good, didn’t it?

[6.17]

A: Yeah, because it didn’t like have a lot going at the same time and it had, like, it never had a layer going up, it was always just all single. (1st December)

During his final interview Student A provided a very clear and well considered description of his own compositional approaches.

A: I was trying to make it so it sounded alright, nice and smooth, and it didn’t have any parts where the beat was too close to the other one. [11.05] Like when we cut up pieces, we’d have to move them and you’d have to be careful or it would go (sings) ‘dah, dah, (long notes) da, da (short stumbling notes)’ like that and that was hard and it kept driving me insane and in the end I just had to leave it.

I: Right, ‘cause you couldn’t make them sync together?
A: Yeah it was just hard and they were always going (sings short stuttering da's) rather than (sings long ones).

I am not sure if he is talking about everything he did or if he is focusing on the last pieces, in particular, *Cocktail*. The syncing of tracks did not seem to be an issue during the process.

I: Right, so when I said ‘make up music’, which is pretty hard
A: Yeah
I: Then what would you try and do?

[11.39]

A: I would first get one of those drum beats that would have like an actual beat and then I’d make something else with like a sound; when you go into all the big screen you can choose something. And then I’d go like, play like just two keys going exactly the same, and then I might play one key going like every two seconds to make it all fit in.

I: Yep
[12.03]
A: I never tried that and I should of, and then it would have worked. And then …that’s it.

I: It was a bit exciting getting it all done

This is an amazing description of a compositional process that he only partly employed. Quite clearly he can see during his reflection that there were approaches that he could have taken that he didn’t. He was quite disciplined in his approach so it is not beyond the realms of possibility that he would have tried this approach. I’m interested by what he means by ‘make it all fit in’. I don’t think that this is entirely musical concept. It has a musical element but there is a “rightness of fit” (Eisner, 2001, p. 20) that seems important to Student A.
I: Every piece that you wrote, did you approach it in the same way or did you try different things?

A: We tried different things. You could see with that *Heavy Wang* one

[12.23]

A: It was all smooth and all wavy and there were other ones where it was all heavy, like I did one with N and his voice was in and that was meant to be all heavy, heavy metal. And that one (*Heavy Wang*) was like all smooth and wavy, so we tried different things.

This ability to discuss his own approach to composition, or at least to what he was trying to achieve, is expanded into a remarkable ability to view his work critically from an audience’s perspective. Some of the participants elected to play their pieces to the other children in their grade, Student A (in his collaboration with Student N) was one of those. When asked what he wanted his pieces to sound like he discussed what he expected and how they were received:

[12.50]

A: Like something that sounded good so that people would go ‘that’s good’ and if you showed the class they wouldn’t want to go ‘oh, that’s boring, show us something real’

I: What did the class say when you showed them?

A: Oh, they just loved N’s attitude when. Because N and I are so obsessed with our stuff they were laughing at our character, they weren’t like laughing at the music. The ones that we really liked. We really liked them because it’s probably the best one we ever made would be nothing to them because they’re used to all this stuff off the radio. [13.21]

This is an amazingly frank and mature response and critique of his own work. Despite saying that they didn’t make any music, A is quite clearly using the term to describe his work and is able to differentiate it against the kinds of things he calls music earlier on. It is as if there are multiple musics that are being talked about. I am interested in
his description of being obsessed with their work. It is as if their passion about what they were doing made what they were doing acceptable to his peers, even if they didn’t really like the music.

In what can be seen to be the complete opposite to the three processes (exploration, development and repetition) that Kratus (1994b, 2001) describes and seeks in his own research, Student A explains his approach in the following transcription:

I: Did you ever really know what sounds your piece would take, or what sounds you were going to use? Or what shape or what format? Did you ever have an idea when you started what it was going to be like when you finished?

[16.35]
A (without hesitation): Never
I: Never
A: So it’s like; ‘let’s make that and it’ll sound really good’ but then it’s like ‘let’s add something’ and then it would make it sound a lot different than we thought it would end up like

There is no hint here of Wallas (1926) or Kratus (1994b) in this process, or even Folkestad or Nilsson (Folkestad et al., 1998; Nilsson, 2003). I can see support for my ideas expressed in my typology of compositional approaches, or at least in my belief in the centrality of play, but it is really just a child talking very frankly about the processes he and his collaborators employed in the creation of their music.

Despite his concerns about not making music and his uncertainty about the meaning of the word ‘composition’, by the end of his final interview Student A had confirmed that what he was doing throughout the study was composing. I asked him what he thought we were doing; music, computers or what. He replied, “Ooh, composing music I think plus changing it”.

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Student C

Student C is in Grade 6 and is eleven years old, she will turn twelve in May. She is a confident and articulate young person who is comfortable with all of the subject areas at school. She loves art (all of it) and although she says she is quite good at maths, it is probably her least favourite subject. She has learnt piano (she practices at home on a keyboard) for about a year. She says that she might practice about three times a week and that she has finished her first book; she didn’t give any details about the sorts of things that she plays though. In her final interview she mentioned that she had stopped learning during the year. She plays netball and basketball, saying that she “does sport pretty much four days a week” (17th Feb).

Student C did not know what I meant when I asked her if she had ever composed any music. I needed to reword the question so that I asked if she had made up any music, she replied that she hadn’t. When I asked her if the activities she did with me when I

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**Figure 4.15: Student C’s compositional approaches**
was her classroom music teacher could be making up music she agreed replying; “That was different wasn’t it – I suppose it was writing music wasn’t it?” (17th Feb).

She listens to popular music, saying that she likes Beyonce and Delta Goodram. She watches MTV, listens to the radio and has “lots of CDs”. She is comfortable working with computers and likes using images in PowerPoint. When asked why she volunteered to participate in this study she replied; “I just thought I’d give it a try and try something different and maybe it would help me in music” (17th Feb).

Student C was responsible for the first drawn composition. Her Little Princess piece is analysed in depth in Chapter 6 and there is background to the use of the drawing tools earlier in this chapter. C liked the sound of this piece and at the time she was very pleasantly surprised by it. In her final interview she indicated that she thought it didn’t sound very good but when I played it for her she was again surprised and impressed by the sound of what she had drawn.

Student C was one of the participants able to provide a fairly clear description of her approach to the compositional process.

I: can you remember what you were actually doing when you were trying to write a piece of music? You know, how did you try to write music?

[7.58]
C: Um, I don’t know, I’d, like, think of a topic and then I’d like listen to sounds to see if it reminds me of it, or something like that, um, yeah.

I: Did you do that with every piece?
C: Yep, pretty much … unless … yeah, probably

I: So your approach was to think of a topic, find sounds …
C: Yeah, and put it all together
I: So you didn’t have an idea of what you wanted it to sound like?
C: No, just …
(1st Dec)
This is a really good description. She has a topic then tries to find the sounds that suit. She was very confident when she spoke about this so I am inclined to think that this was very real for her. I’m not sure how far she took it into every piece but she is certainly demonstrating a level of self awareness that is rather surprising.

She had an interesting response to my question about whether what she had created was music. Her first response said with no hesitation was that she didn’t but this was softened and clarified:

I: Do you think that anything you wrote could be described as music?

[4.17]
C: No (this is said with no hesitation whatsoever)
I: Why?
(She thinks a bit)
C: Um, let’s just say that (whispers) I’m no good at writing music. (Stops whispering) Only when I’m being with my friends and I’m being fun, like with me and K’s album

In this brief conversation she says that nothing she did was music because she isn’t good at writing it but that when she’s having fun with friends it is okay. When I continued with this topic, talking about one of her later pieces, which was written with young children in mind, she responded more positively:

C: We made Shake but she didn’t make it as an album she did like totally different; separate.

I: But that was music wasn’t it?
[6.49]
C: Yeah. We liked having it for little kids

So now that it has an audience of small children, their music becomes music. I continued:
I: Remember I spoke about John Cage who wrote a piece of music about silence? Would you call that music?
C: Yeah (No hesitation)
I: So yours was music?
[7.06]
C: I guess
I: Okay, but it doesn’t mean it’s going to be a pop song that people are going to buy?
C: No (laughs)
(1st Dec)

Her response to my question about what she thought that she had learnt by doing the current study provides an insight into her understandings of instrumental playing and is an articulation of a constructionist perspective of learning:

I: Can you tell me if you think that you’ve learnt anything during this time
[16.46]
(No hesitation)
C: I’ve learnt lots of music stuff like even just making music on the computer, I never knew how to do that at all and just like … play … like … just … actually using the, like I used to play piano but I just kind of remember it and not know the keys as much but I reckon I’ve learnt heaps just … making music and all that stuff and just using the computer better and stuff like that.

This is an interesting connection between what she used to know with the piano and what she now knows. (I think talking about not knowing the ‘keys’ she means the names of the notes she is playing on the keys, not key signatures). She is saying here that she has been making music without being restricted by not knowing the keys. She begins to use the word ‘play’ but moves on and says ‘using’ instead. So by actually doing the task of making music she has learnt how to make music. Student R makes a similar comment in his story.
Student K

Student K is in Grade 5, she is eleven years old and won’t turn twelve until the end of the year. She has learnt clarinet for one year but didn’t talk about what she could play or what she had learnt. She learns at school from the person who runs the school band. Her favourite subjects are sport, art and English. She does sports aerobics and her team “got to the nationals and came third”. She says she isn’t very good at art but loves making things. She loves to read Mary-Kate and Ashley books and the Saddle Club series. She likes writing fantasy stories and sometimes writes in her free time. She has a keyboard at home and K sometimes “teaches herself from a book how to play songs”. Also at home is “Dad’s busted guitar, a tambourine and some rhythm sticks”.

Student K, like all the other students did not know what I meant when I talked about composing music:

I: Have you ever composed any music?
[She raises her eyebrows and looks a bit confused]
K: What is it?
I: Made up music?
K: Yes … in music lessons? (This is a question asked with uncertainty as if she is trying to give the correct answer but needed to check).
I: What with me?
K: Yes
I: Any others?
[1.34]
K: And with last year’s music teacher … I wrote one with my dad once but it didn’t work out
(17th Feb)

She gave her reason for volunteering for the current study as, “I like music and I want to know more about it so …”

Throughout the study and in analysis it appeared that Student K liked working with sound. In terms of number of compositional attempts she made more that were look-based but she discarded that approach when she couldn’t make them sound good. Perhaps she created more of these in an attempt to correlate look and sound. When looking at her output after repeat files have been removed she does appear to have a strong preference for sound. This preference comes through clearly in her final interview.

I: What do you think was the best thing that you did?

She pauses, thinking
I: The best thing or the best music that you did
[2.33]
K: The thing I made with all the sounds like happy and stuff, and I found music and I put it into a piece.
I: Now that was early on and that was you
K: Unhuh
I: That was before we got the puppets wasn’t it
K: Ah, yep
I think I have this wrong. She is actually talking about $K$ from 25$^{th}$ May but I think that she is referring to one of her very early pieces, Student K1.

I: Why did you like that one the best?
[3.20]
K: because it sounded good

The piece in question, $K$, is a sequence of sounds that belong to individually named tracks. This piece is analysed in more detail in Chapter 5.

I was surprised when I asked her what the best thing about the whole project was and she answered:

[1.47]
K: In the first session?
I: No in the whole project
K: Probably making my own music and putting it in Media Player – as an mp3
I: Which we can’t find. Why was that great or the best?

[2.08]
K: ‘Cause I liked it

We both laugh at this somewhat inane answer

I: Did you like what you did or being able to do it or both?
K: Both
(1$^{st}$ Dec)

Here again, Media Player and the ability to put music into it appears as a powerful component of what the children did and as an affordance of the environment.

Student K’s awareness of sound and its importance was made more apparent when she spoke about the intrusion of background noise when working with microphones. She mentions this on three separate occasions during her final interview. Once when...
asked if there was anything she didn’t like about what we did or what happened during the study. Her reply was; “When we recorded through the microphones we could hear all the boys talking”. The second occasion was when asked which program she preferred. She said that she liked Cakewalk because she was used to it. Her response to my question about Audacity was:

K: Yeah that was good too but you got the background music
I: Yes the background sounds …
K: Background sounds
I: …from all the noisy boys
K: Uhuh

The third occasion was her response to my question about her use of ‘real’ instruments (the girls had found a tub of percussion instruments in Week 21 and immediately wanted to use them).

I: Did you like using the real instruments?
[13.25]
K (matter of fact): Yeah
I: Was it better than the keyboards, the same?
K: You got the background sounds again, so yeah. And it was usually a bit loud, so.
I: Yes, recording was a problem

These comments are interesting because they demonstrate that K was actually thinking about sound when she was composing. The idea of background sound intruding comes through strongly in this interview and is about the only negative aspect of her experience. It is especially interesting in the context of K’s deliberate and quite frequent use of background sounds as a deliberate part of her compositions. She clearly differentiates between those sounds (and their use) as components of her music, and unwanted intrusions into her work. This appears to be evidence of complex musical thinking.
She was able to articulate an approach to composition that fits with my own interpretation of what her actions:

I: Can you remember what you were trying to do when you were writing a piece of music? What sort of things were you trying to do?

[9.33]
K: Ah, I was trying to make it fit together
I: Right
K: Sort of the same rhythms … kind of (this last bit is added very quietly and somewhat tentatively)

This is an interesting use of the word ‘fit’ and is another example of what Eisner (Eisner, 2001, p. 20) calls the “rightness of fit”, the earlier one being Student A’s comments in this chapter.

I: Were you trying to make, you know, verse, chorus, verse, or introduction, ending, middle?

[9.55]
K: I did the ending and start sometimes, like a drum roll or something
I: Okay, yep

I: So how did you go about composing? What was your process? What did you do?

[10.12]
Thinks
K: I usually did it on Home Studio and I got the
I (whispering): You’re talking very quietly
K (whispers back): Oh, sorry (laughs)

[10.28]
K: I got the (thinks) midi file, I got the midi one and I put more of those in and then I got a starting sound and then I just played
I: So you worked from a starting sound first?
K: Yep
I: did you think of a topic first?

[10.45]
K: Sometimes
I: But that’s not what you did always?
K: Most what I did
I: Find a topic?
K: Sometimes I just got music and see how it sounded
I: And that gave you a topic?
K: Yep

I: Alright, so you find a staring sound and just moved on from there?

[11.11]
K: Mmh, yeah. That just got me my topic

This self description of her compositional process is further evidence of the importance of sound to Student K. I’m not sure why I was so keen to find out about topic since she only started talking about topic after I brought it up.

In a prolonged discussion about what music is, Student K first denied that what she had written was music and then (with some probing from me, not influencing) she came up with a definition of music as sound that allowed her quite confidently to claim her compositions as music. That discussion follows:

I: Do you think that anything you wrote could be called or described as music?
[6.33]
K: Ahh, probably not
I: Why?
K: Because it’s all … maybe that one I did the first time but other times it’s not in tune and stuff

Here is acknowledgement of their lack of adherence to musical convention and its impact on the status of their compositions.

I: But remember I spoke about that guy John Cage who wrote that piece of music that had no sound in it at all?

[6.50]
K: Oh yeah, I did that

This is said as a matter of fact, it was news to me and was something that I had so far missed in my analysis.

We laugh

I: What did you call it?
K: No sound, I think
I: I didn’t find it; I’ll have to find that one

She actually left these pieces as *untitled*; they are presented for discussion in Chapter 5. I had dismissed them and had to go back later and interview her about these pieces. I had stopped them doing this but K had obviously wanted to keep going. Even though in the session recordings she is talking about recording us, I didn’t think that she had saved anything.

I: You did one with nothing in it?
[7.01]
K: Yep, for one minute
I: For one minute?
I: I’ll have to find it
K: I can’t remember if I deleted it or not
I: I hope you didn’t
I: Given that they could call that a piece of music, why couldn’t you call what you’ve done a piece of music?

[7.40]
K: I guess I could now
I: You could now. Is that because I’ve just told you could, or what do you think a piece of music is?

[7.50]
K: Well, nothing isn’t really a piece of music and sounds are music, so … yeah
I: They were organised weren’t they?
K: Kind of

She has changed her mind and is now happy to claim that this piece was a real piece of music. The definition of music as sound is fascinating, the use of the double negative is interesting and ambiguous. It could be interpreted that ‘nothing isn’t really a piece of music’ means that everything is a piece of music, so sounds are music. On the other hand, and I think this is what she really meant, she could be saying that ‘nothing’ (no sound) isn’t really a piece of music, sounds aren’t ‘nothing’, they are music. This argument is particularly appealing in the context of her understanding of the John Cage piece, 4’33”; this understanding is presented in detail in Chapters 4 and 7. I believe from my analysis of events that Student K understood the Cage piece not to be about nothing, but to be about the sounds that filled the silence. This was what appealed to her when I brought it up and this is what her *Untitled (No Sound)* pieces were about. I believe that she is saying here that even though the Cage work and her own versions of it are silent, they are not ‘nothing’, they contain sound and sound is music. Through this simple statement of a complex idea she has defined her own work as music.

I start looking for more of her ‘silent’ piece
K: I think I deleted it
I: Oh

I: So you didn’t put any sound in it at all? Did you record it? What did it sound like?

[8.51]
K: Like nothing
I: Was there any noise at all?
K: Ah, background music. But not in the computer, just like …
I: So the computer didn’t record anything?
K: No

I: So you did write music?
[9.13]
K: Yep
I: And not stuff; you wouldn’t be selling it
K: No definitely not (laughs)

Student K provided some interesting insights to the practice of drawing compositions. She was very interested in this approach but found it to be unsatisfactory. She made a number of attempts to write her name and mentions in her final interview that she tried to draw a house. Her description of what would work and what wouldn’t, and why is worth including:

I: I know you spent a lot of time writing your name. Did that work (I am talking about her using the pencil tool in Cakewalk to write her name)
K: No, not really, it sounded weird, but I did one that worked
I: What one was that?
K: I did one … it just went up and down
I: Oh yeah, sort of waves – patterns rather than trying to do pictures
K: Yeah

I think that she is referring to Drum Crazy, a percussion piece that fits her description
K: I did the house and that didn’t work so I deleted it … I did get the house but then I did another one with just six (I’m not sure of the last word she says, it sounds like ‘hats’ but it might well be ‘tracks’)

I: Right and that worked better?

K: Uhuh

I: Yes, because after C did her little girl that everyone liked, everyone went crazy painting sounds didn’t they? But it didn’t work very well did it?

K: No

I: Why?

K: Because all the sounds were mixed up and it went from really high to really low, in the middle and it was everywhere

Student K was the student who displayed the strongest preference (or at least the most easily identifiable) for an approach to all of her music. She focused heavily on sound throughout the study. She worked well with others or on her own and was happy working either way. Throughout the study she also demonstrated a sense of humour and positive spirit to everything that we did.
Student L

Figure 4.17: Student L’s compositional approaches

Student L is in Grade 6, he is eleven years old and will turn twelve in September. He says that he has played bass guitar but he learns from a friend of his dad, who sometimes teaches him. His father plays in a band and there are drums and some guitars at home. When his dad’s friend comes over for practice he sometimes shows Student L some things on the bass.

When I asked him if he had composed any music he looked very confused and replied, “What’s …” I changed the question to “made up” and he replied, “Nuh”. He is a happy young person who appears comfortable at school. His replies about school and sport were mostly nods or one word answers.

His favourite subject at school is sport where he plays basketball and football, and says that he is good at football. The following transcription details his school likes and dislikes:

I: What about other subjects?
L: Maths
I: What do you like about maths?
L: Uh it’s pretty easy

[02:50]
I: What, tables? Division? Space? All that stuff – measurement?
   I was trying to get some picture of the child as well as encouraging him
to say more – he nodded after each question until I mentioned
   measurement

L: Oh I only like, like plusing and subtracting and stuff – not like areas and
perimeters – it’s all easy but it’s a bit boring.

[03.00]
I: And English
L: Nuh
I: Reading
L: Reading’s okay it depends if you’ve got a good book
I: What’s a good book?
L: Harry – Harry Potter and the ‘Just Tricking’ and ‘Just Crazy’ books
I: Do you write any stories?
L: Nuh

[3.38]
I: Art?
L: Yeah I like that
I: What do you like? The drawing or making?
L: Painting and the clay (he was quite enthusiastic about that)
(17th Feb)

He is a fan of rock music and likes “Red Hot Chilly Peppers, a bit of ACDC, Queen,
Jet, Offspring, Three Doors Down”.

His reply to my question about why he volunteered for this study indicated a fairly
deep level of thinking about what the study actually entailed:

   L: Yeah so I could write my own music and make up something.
[7.11]
I: Have you got any ideas about what you want to write?
L: No not really?
[7.25]
I: You just think it will be good?
L: Yeah
(17th Feb)

Student L’s final interview was so telling that I am compelled to use much of it here as a series of transcriptions, all taken from the final interview of 1st December. It provides a remarkable insight into the child and his understanding of his own compositional approaches and motivations. Much of what he talks about relates to the final four or five weeks of the study but it is still completely fascinating. When he talks about works prior to that period he still amazes with his candour and insight.

The first transcription deals with his thoughts on what was best about the project and what he did that was the best:

I: I want you to think about the whole project. Can you tell me what was the best thing about the whole project?
[0.35]
L: Making the album
I: Why was that the best?
L: Because you got to use Media Player and use all the drum maps and stuff
I: What about doing the project itself, making music and all that
L: That’s what I mean, making the music
I: Okay but the end of it when you put it in Media Player that was like that was the highlight
[1.03]
L: That was the best

As described earlier in this chapter, Media Player was a key factor in this project

I: What was the best thing that you did?
L: Probably the first song we did because I invented it
I: What was the first song you did?
L: Well we really copied Student N. When we had to write a song about a colour
I: When did you do that?
L: Um, it’s ‘Blue’

Interesting that he thinks of this as copying; his song is completely different from Student N’s or any of the other children who wrote a ‘Blue’ song.

I play the song

I: That works doesn’t it? Was that you singing or R
L: That was me singing
I: But you and R did it?
L: Yeah. R did the piano playing and …
I: Cool. So why was that the best?
L: Because it was the first song and also it was the best because of the drum beat
I: Oh
L: It’s all in time
I: It is actually, yeah it really works

This is a remarkable comment, despite what I say in the interview it isn’t actually in time, but it sounds as though it is. The main drums and the voice work well together but there is definitely rhythmic dissonance present.

A number of times during the final interview, Student L pointed out that he and R had misnamed their 10th Song piece. The problem was that it was actually the 9th song on their album; they had miscounted. This proved to be of great concern to L and when
asked if there was anything he wanted to write but couldn’t he immediately replied, “Yeah, 10 songs”.

He was also very confident about the status of his compositions as music:

I: Do you think that anything that you wrote could be described as music?

(Confident and almost indignant)
L: Yeah. This one (points) and …that one
I: Scott’s Stuff?
L: Yeah
I: That’s the drums and then the banjo solo
L: Yeah
I: What about Bear?

(I try to play it but there are problems. I find it; L makes a groan but listens)

L: Ah … Bear

I: What about Blue, that was music wasn’t it?
L: Yeah, but what’s bear? I can’t remember Bear

I: Is that music?

L: Yeah
I: King 4, what was that? Oh that was the other one that R did
L: Yeah I think so
I: Who Knows? That was the band wasn’t it?
L: Yeah but guess what it is

I play it – it is the backwards version of ‘Drunken Sailor’. We laugh and L starts singing it

I: So it was music? All of the stuff you did was music?
Student L was not a big fan of drawing music and he explains why in the following transcription. He is referring in particular to his Bridge pieces although he did draw a guitar in his Rugrats piece and drew his Space Invaders compositions X1 and X2, which I present in Chapter 5:

I: Now you did some drawing stuff but you went into really big black blocks of colour didn’t you? Remember you were trying to do a bridge and you were trying to do …?

L: Yeah

I: you’re laughing

L: Because it wasn’t very good and I never got to do it

I: Why wasn’t it good?

L: Because the bridge sounded like (makes noise – a descending glissando over an octave) [7.39] and it was all too low. Because when you go down in the program it never ends so the notes are going lower (his voice gets lower) and lower

I: With the paint brush?

L: Yeah. It never ended

I: Yeah. So you didn’t like working with the paint brush?

L: Nuh

I: It was a good idea at the time

L: Yeah, it was fun but … hard

This is a valid response from L given the nature of his drawn pieces. It is a shame that neither of us remembered X2 at this point, since that was a very successful drawn composition in terms of both look and sound. His guitar drawing didn’t work at all in Rugrats and he removed it almost immediately.

He describes his musical purpose as trying to make a CD:
I: Can you remember what you were trying to do? Like when you were writing a piece of music were you trying to do something?

[8.13]
L: We were trying to make a CD
I: Right, okay. Were you sort of going, ‘I’m going to write a song which is going to have a verse and a chorus?’
L: No, it’s just no verses and no choruses, it’s just a chorus

I think that he might only be referring to Who Knows but I didn’t find out

I: So how did you approach writing?
[8.28]
L: We didn’t
I: But you must have done something?
L: Well … we … we … when we did the first song … or the first time for each song. We would sing it and take in turns and then if the other person didn’t like it then he would get to change the words and then the other person got to sing it
I: Right

This is an accurate description of L and R’s practice for many of their pieces. There was no plan except that they would take turns and revise as they went along. It worked for them, there were very few disagreements and they were very happy with the result.

He was so focused on the CD when answering my questions that I found it difficult to move him on, still his responses are worth presenting here, he is correct but is really only referring to the process of creating the CD, which was song based:

I: So you didn’t worry about sounds. Did you just go searching for sounds and then you’d make a piece of music? Or did you go for drum beats?
[9.41]
L: We made the music and then we … We sang the song first and then we got the music
I: So most of what you did was based around singing?
L: Yeah

When asked about working in Cakewalk he replied:

[10.00]
L: That was okay but not as good as Audacity
I: Why?
L: Because in Home Studio you couldn’t like … With Audacity it’s always big and with Home Studio it’s all small and you can’t read it and they’ve got … um … It’s basically the same isn’t it?
[10.25]
L: They are the same

This is a remarkable realisation. He is thinking about the differences and then realises that the similarities are greater than the differences

I: well they’re different. Home Studio is more complicated I think
L: Yeah, but every time we made a song we had to go into Home Studio for the drums. Except for those other ones
I: And then record them through
[10.42]
L: No we just cut and pasted
I don’t think this is possible
I (Thinks about taking this point up but decides against it): Right

I asked him about when I got them to write stories. He doesn’t seem to remember but becomes very excited when he remembers a piece that he and Student A read together:

[11.30]
(Excited)
L: Oh the places … Oh the Places You Will Go
I: Oh okay, you read that out didn’t you?
L: Yeah
I: so why was that good?
[11.38]
L: Because we copied it, me and A, and then we took in verses and then we put, I think we put music to it
I: No you didn’t, you just did steps of reading
L: Yeah. A page each and it rhymes
I: You liked that?
L: I like rhyming things
I: You didn’t write any rhymes in your music?
[11.57]
L: Yeah
I: Did you? Which one?
L: Row, row, row, your boat.
I: Yeah but you didn’t …
L: We changed the words

I play it – it is ‘chuck the teachers over board and listen to them scream’ I’m not sure but I don’t think this is an L original

The following transcription presents Student L’s remarkable insight into what it was he was trying to do and why. True, he is still talking focusing on the last few weeks but it makes fascinating reading:

I: did you ever know in your mind, what a piece was going to end up like?
[12.58]
L: No. Well because we just made it up as we went along, so you didn’t know and the other person was doing it
I: Did that matter? Did you mind that?
L: No
I: Is there anything that you would have liked to have composed but you couldn’t?
(Thinks)
[13.25]
L: Yeah, like 10 songs
I (Laughs): 10 songs
L: Not nine with a song called 10\textsuperscript{th} Song
I: But that was time?
L: Yeah. But that was R’s fault because he was always telling one ahead and I was sure as sure that it was the ninth when we …
I: Okay, right

I: So you didn’t want to write the world’s greatest pop song or anything?
(Laughs but doesn’t hesitate in answering)
[13.35]
L: Nuh, we just wanted to write 10
I: Because there was a competition with N?
L: Yeah, a competition we won

This presents a very interesting approach to composition and to the project; the idea that the worst thing was not getting ten songs done. I thought that they ran out of time but I think that listening to L, if they had known they only had nine they would have written another one; just like that, what it was didn’t matter, just that it was the 10\textsuperscript{th}. He continues with his discussion about the competition between the boys; L and R against A and L:

L: They wrote four songs I think
I: Whose were better?
[13.46]
L: Ours, because ours had singing
I: Oh, okay but N’s had (I do the wah wah guitar)
(L concedes this one)
L: Yeah … but that was only in one. Well only one of ours doesn’t have singing
I: What did the kids think of yours when you played them?
[13.59]
L: They liked ours best because when N and A’s came on they all ran and got their play lunch and went outside …

Here is a wonderful example of the amazing world of childhood and school. Student L is very confident about the qualities of his pieces and why they are better. It is almost a logical argument; his have words, so they must be better. The fact that the timing of the playing of A and N’s music interfered with the class’s appreciation of it doesn’t enter his head. According to N’s version the children really enjoyed his music, and A said that the class laughed along with them.

His immediate response to what he learnt by doing this project is also very interesting; he learnt the programs but importantly he learnt that you can get out of school by “doing stuff”. With further probing he talked about music and song writing. I was pleased by his description of this study as “fun school” though:

I: Now, tell me if you think that you’ve learnt anything from what we’ve done this year?
[14.19]
L: How to use Audacity and Home Studio, and a keyboard
I: Anything else that you’ve learnt?
L (laughs): That you can get out of school from doing stuff
I: But we were in school
[14.32]
L: Yeah but fun school
I: Fun school. What about music, have you learnt anything about music?
   Silence
I: Nuh?
[14.39]
L: Oh, that I can make a song
I: Well that’s pretty important isn’t it?
L: Yeah but …
I: Did you think that you could make a song before we started?
L: Yeah, because you said we were going to make a CD so I knew
I: Fair enough

There is much in this interview that runs counter to accepted ideas about children and their music making. Student L’s responses indicate an approach that is very much about being in the moment, about unplanned and collaborative turn taking, and about a quantitative approach to song writing; get ten songs written. It might appear to the reader that some of L’s responses were flippant or ill-considered, I think not. He was as engaged in the process of serious reflection and accurate answering of difficult questions as any of the children in this study.
Student N is in Grade 5 and aged ten years old is the youngest participant. He will turn eleven in April. He is about to start learning the bass guitar and is excited at the prospect, proudly telling me that he has his own bass and an amp. He did learn the drums for one year but gave up because “there was this kid who kept bossing me around and I just quit”.

He was confused when I asked about composition:

I: Have you ever composed any music?
N: What does that mean?
[1.47]
I: Have you ever made up any music?
N: I tried
I: Where abouts?
N: At my home
I: On the bass guitar?
N: No on a snare for a drum
I: So you’d make rhythms and try and make a tune
N: Yep but it didn’t work

[2.05]
I: It didn’t work?
N: No
I: Why not?
N: Because I didn’t become famous

Apart from the obvious humour, which typifies Student N’s approach to life, he was another participant who really didn’t know what composition was or what we were actually going to be doing in the study.

His favourite subject at school is maths, especially the times tables since he knows them all. His other favourite subject is sport and he plays cricket, football and basketball. He doesn’t like English “because English makes me annoyed because I can’t do it that well”. He then goes on to say that he is good at writing stories and that reading is fun. Obviously there is something about what he does in school during English that he doesn’t enjoy. He likes to read “funny books, or books about footy or fishing or stuff”

He has a keyboard at home that his sister used to learn, he plays it sometimes. He listens to music.

I: What music do you listen to?

[5.36]
N: I usually listen to Smoke on the Water now; because that’s the only song I can play on my bass guitar

Interestingly, he didn’t know that Smoke on the Water is a Deep Purple song (had never heard of them). His favourite music is rock; AC/DC, Queen and (now that he knows who wrote Smoke) Deep Purple.

For Student N, creating Rock was a driving force during this study. That is not to say that he didn’t use different approaches, he did, but coming through much of his work
is the desire to make Rock. During his final interview he was very certain about this desire:

I: I want you to think about everything we did throughout the year and what was the best thing

[0.30]
N (no hesitation): We got to make our own band
I: Right. That was the best. Why was that the best?
N: Because it was fun
(1\textsuperscript{st} Dec)

I then asked him if he was in a band, of course I meant a real band, school or other. Student N replied somewhat incredulously that he was in a band, he’d just told me, \textit{The Cookies}; the band that he and Student A created for this project. A band that really only came into existence when the software asked them for a band name.

He selected \textit{Heavy Wang} as a favourite piece when asked. This is also one of Student A’s favourites:

I: Why was that the best?
N: Because it sounds so cool
I: tell me why?
N: Just ‘cause it sounds so good

I play the piece
I: But you guys wouldn’t make anything more of that would you? I said ‘come on boys, add a chorus, add a verse’

N: Nuh, I like it

He also really liked the \textit{Dead Rock} piece, in which he sings a crazy guitar solo.
He was able to differentiate very clearly between the compositions he had done in music classes using paper and real instruments and the compositions he did in the current study. He also uses ‘composed’ in an interesting way:

[3.32]
N: This was way different because we used the computers
I: What about the music
N: Well it was different because it was all composed
I: What was?
N: The music
I: How do you mean?
N: Well it’s already there on a file instead of when it’s like out there on a normal instrument you have to like find the tune until you actually get it

I: Okay. But didn’t you have to do that with the computers?
[3.58]
N: Yeah but it actually said what the sound was
I: Oh okay
N: So if you’re trying to find (make a drum sound) you don’t know what it is
I: Okay and also with this one you could try it and if it didn’t work you could throw it away
N: Yeah basically
I: Try it again, get it right, save it?
N: Yeah

This insight into his perceptions of the compositional process and of how the electronic environment works for him is relevant to my discussion about affordance earlier in this chapter.

During the final interview he was at odds with his main collaborator, Student A, in his response to their final piece Cocktail. Student A said that this was his favourite piece because it managed to get close to what he was trying to achieve. Student N’s response was different:
N: Until we ended up with *Cocktail* I think, which was just a bit out of hand
I: That was the mixture. Why was it out of hand?
N: Because it had *Highway Star, Smoke on the Water, Thunderstruck* and *Dirty Deeds* all put together and like
I: that was alright though wasn’t it, or was it too much?

[5.27]
N: Too much I reckon, but A insisted we kept it so …

I find the track and play it on Media Player

[6.57]
N: Wow
I: There’s a lot of sound in there
N: I told A
I: There are some composers that actually put two pieces of music together
N: mmh, that’s just messy that song

This last comment about it being a messy song is interesting from N who composed a number of pieces with all sorts of rhythmic and melodic dissonance. Obviously they weren’t messy though. This is made apparent when we listen to *The Big Bite*, a piece that is made up of five tracks of opposing rhythms. His response to the piece was; “Ooh that’s good, ooh”.

Student N was less certain of the strength of the collaboration than Student A but he said that it was better working with someone than on his own. His concern was that they didn’t always agree:

[10.35]
N: Well we were arguing most of the time about what we were going to do.
That’s like *Smoke on the Water Uncut*, it’s only because A was on the other side of the room when I recorded that and he said ‘oh we might as well just keep it’. That’s how that song came up
Student N was very certain about what he wanted to produce; Rock. When asked if he knew what he wanted a piece to sound like, “Rock” was his reply. I then managed to get him to describe his approach to composition:

I: So how did you approach that, how did you make a piece of rock?

[11.03]
N: Well we went into that file thingy, drum styles that’s it. And we got a couple of those out and put them together. Then we just went with the keyboard and just went (makes a drum beat sound a la ‘We will rock you’) something like that yeah

I: So you start with rhythm and then build up. Now one of them you had a bass line and lots of drums – the one where you sang

[11.31]
N: *Dead Rock*, yeah that one was good
I: Why did you sing?
N: Well … we couldn’t exactly find an electric guitar … so I just sat there on the floor being all dumb. A said, ‘I was recording that’ and I was like, ‘oh, oh’

(This wasn’t exactly the way it was recorded but it is fair to say that the first take might have been serendipitous rather than planned)

We are listening to it. I laugh when it finishes

[11.57]
N: We played this in class the other day
I: What’d they think?
N: Well all of us who did this with you had to show their work to the class (I hadn’t been made aware of this)
N: We played this and everyone just fell on the floor laughing
I: Right, but did they like it?

N (sincerely): Yeah. Everyone thought it was funny
I: See I think it’s pretty funny but it’s good isn’t it?
N: yeah, it’s good

Clearly Student N is aware of the funny side of this composition but he is also acutely aware that it is a good piece of music; I have to agree with him.

He was certain what he wanted a piece to be but did not have any real idea about how it would end up:

I: Did you know; did you ever really know what it was going to sound like before you started?

[14.19]
N: No not really
I: Did you think about what shape you wanted it to take? Whether you wanted it to go for two minutes and have a chorus and a verse …
N: Well, no not really
I: You just wanted sounds?
N: Yeah.

He was not clear on whether or not all of his compositions were actually music. He thought that *Smoke on the Water Uncut* was “more of insults that song” (this piece contains him singing that Student A smells like his rotten socks) but the two boys did agree to include it on their album.

He was happy with what he achieved and when asked if there was anything that he would of liked to compose but couldn’t, replied; “No, not really. Everything we found a way to do. Like the electric guitar I did took us about two weeks to figure out how to do”.

In response to my question about what he thought he had learnt he made an interesting response about being creative:

[15.18]
N: Well … I’ve learnt how to … how to … make songs on the computer and stuff like that. And how creative you can really be.
I: How creative? And is it more creative than if you were doing story writing or drawing pictures
N: Yeah

I could not probe any deeper with this but it is an interesting response given that creativity was not mentioned in this interview and was not something that I focused on during the study. Beyond the creative aspect he found it difficult to articulate anything else that he had learnt because “It’s more just like having fun than actually learning stuff”. This was a very pleasing response for me to hear given, that I am aware of how much he achieved during the course of this study.
Student Na

Figure 4.19: Student Na’s compositional approaches

Student Na is in Grade 6, she is eleven years old and will turn twelve in June. She has never played an instrument, nor had any desire to. She expects to learn the clarinet at high school, since one of her brothers learns clarinet and the other, saxophone. Apart from these instruments there are no others in her home. It is surprising that she actually volunteered for this study, given her shyness and apparent lack of desire to be the focus of attention. She said that she did it because it “sounded like fun” (1st Dec) and that she likes music and computers. The other two girls in the study worked well with her and at times encouraged her to contribute ideas and to play sections of their collaborative pieces. When asked if she had ever composed music, she didn’t reply. When asked if she had ever made up music, she also didn’t reply. My notes indicate that she looked confused by these questions.

Student Na hardly spoke a word (or at least none that the microphones picked up) throughout the whole project. Most of her comments were one-word answers to my
questions. She was happy to turn up and worked well on her own and collaboratively with C and K. She told me that she was always like this at school but was louder and naughty at home. In her initial interview she said very little and needed to be prompted throughout. The following transcription about her likes and abilities at school is typical:

I: Do you have a favourite subject
Na: Not really
I: Anything you’re not good at?
Na: No
I: You just plod along at everything?
Na: Yes
I: What are you better at?
Na: I don’t know
I: Maths?
(Silence)
I: Writing?
(Silence)
I: Story writing?
Na: Yeah I like writing stories
[1.50]
I: Any reason?
Na: I just like writing them
I: what sort of stories?
Na: Fantasy
I: Do you make up your own characters?
Na: Yep
I: What sort of characters?
Na: Um I don’t know
I: Can you remember any names?
Na: No
I: What about art – do you like art?
[2.31]
Na: Yep
I: Drawing
   (Shakes her head)
I: Making things?
Na: I like making things
I: Clay models or paper ones?
Na (nods): Clay ones
(17th February)

Throughout the whole study there are few interactions between Na and myself or with the other children that reveal in depth anything about her ways of working or about what she was trying to achieve. The following transcription from the girls only session is typical of her verbal interactions:

[11.34]
I: Have you made any progress? Does it sound any more like you think it should sound like?
Na: No
I: Do you think you know what it should sound like?
Na: No
I: Okay why don’t we do something? Why don’t we mute this one? What have we got here; two pianos?
Na: Yes
I: How do they sound?
Na (Waits): I don’t know
I: Okay, what are they meant to be? Why have you got them there?
[12.06]
Na: I don’t know
I: Okay, is it because they’re drawings? Is it waves?
Na (Waits): That one isn’t
I: That one is. Why don’t we try what C did and change the piano one to a rhythm sound?
(17th August)
Perhaps the most remarkable (and possibly the most unexpected) response that Student Na provided was during her final interview when I asked her what was the best thing about the study:

I: I want you to think about everything we did throughout the year and what was the best thing?
Na: I don’t know
I: I don’t mean the best piece of music, what was good about what we did?

[0.49]
Na: Um, I learnt how to play the keyboard
I: Did you? I didn’t teach you that.
Na: No
I: So you must have taught yourself
Na: Yeah
I: Wow, what did you learn?
Na: I don’t know
I: Just how the notes work and …
Na: Yeah

This revelation completely astounded me. I had no idea that she thought that she had learnt to play the keyboard. I had seen no evidence of this skill development and had certainly not even talked about skill development in the sessions. Obviously in her own mind, however, she has learnt to play the keyboard and sees this as the best thing about her participation in the study.

In the analysis of her pieces I did notice a tendency towards a pseudo pianistic style, wherein she played melodic lines in the style of someone playing a piano (Blue and Palm Tree), but I don’t know if this is what she meant. She also attempted to use Hot Cross Buns in one of her works (Project). In the final session (9th Nov) she sat for most of the time watching and listening to Students C and K working on their Christmas piece. Student Na was part of this collaboration but had the job of controlling the recording. The following transcription from that session shows how
when given a chance she was able to play the melodic line (*Joy to the World*) correctly at her first attempt.

I: Come on girls, what’s happening? Are you getting them to record, Na?

Na: Yes

I: Have you played anything?

She shakes her head

I: I think Na’s in charge

K (to Na): Can you play anything?

She shakes her head

K: I can teach you to play ‘Joy to the World’

She nods

I: How about you just make your own piece up?

I leave as K starts showing Na how to play it by showing her where to begin and then playing it for her slowly.

Na plays it using her left hand. She gets it correct the first time. C and K look at each other

K: She can do that very well. I only showed her (she plays it)

C (looks uncertain): Oh that’s so easy you just go

She plays a descending C major scale

K: No, you have to do the tune

She plays it with the correct rhythm

K: Not just going (plays the descending scale with all notes the same length)

They laugh

Na does it again (correctly)

This interaction between C and K is rather surprising given that C has been playing it for the last 15 minutes. Perhaps it is to do with the way K fingered it rather than the pattern itself. Of course Na has been watching them play the pattern repeatedly over this time.
K turns to Na
K: Do you like that sound?
   Na nods
   [38.29]
K: Do you want me to record while you play?
   Na nods
K: Let me swap seats

While this is going on C has started very slowly playing an ascending C major scale. She looks quite surprised. She then plays the descending pattern. It looks as though she is making a musical connection here

C wants to play the ascending scale against Na’s descending one
K stops her so that they can listen to Na’s recording. They listen
   [39.08]

Na looks at K and smiles – she can’t believe what she is hearing

(9th Nov)

The joy that Student Na experienced at being able to play the melodic line and to hear it played back correctly was obvious. It might help explain why she believed that she had learnt to play the keyboard. The above transcription also illustrates that Na’s lack of confidence (and her response to questions) was not restricted to her interactions with me.

She was not able to describe her compositional approaches or what she was trying to achieve (if anything) with any of her pieces. The closest I got to some indication of her own understanding of the way she worked was when I discussed her Dragon piece with her:

I: so you wrote the words first?
Na: Yeah
I: and then you used each set of words to write

[11.17]
I: oh that was all you had (reading): ‘Funny, blows fire, lives in water, strong’. And that’s exactly what you did with this (showing Cakewalk file). (Reading): ‘big, bright colours, loud’; you changed something; ‘talented’ so you … can you remember how it went?

[11.34]
Na: No
I: But you were happy with it?
Na: yeah

I: So apart from that one, where you had the words, did you approach your compositions in the same way?

Long pause
Na: Umm, don’t know
I: You know, go for sounds, find a sound, make a pattern and then make another track?
Silence
I: that’s what you tended to do, wasn’t it?
[12.06]
Na: Yeah
I: And you did all of them the same?
Na: Of the ones that I did?
I: yeah
Na: Not all of them
I: What did you do differently?
[12.20]
Na: um I don’t know
I: Apart from the drawings. Now with the drawings, the island one; did you just try to do drawings?
[12.29]
Na: Yep

I: And then fit sounds to them. Because I remember some of your sounds, you did your drawings and they were up too high or too low, so they didn’t sound.

[12.40]

Na: Yeah

I: and we brought them down; did we bring them down? And that made them a bit better, but it didn’t work very well did it?

Na: No

(1st Dec)

Most of this interaction is me prompting her for answers but it does represent the way she interacted throughout the study. I was able to get a glimpse of some of her thinking and of her expectations during the girls only session. In the following transcription I present a discussion between Student Na and myself about the correlation between the drawings she has done and the sounds they produce in her piece Palm Tree:

[16.00]

I: Okay, you can decide to throw that whole thing away or you can keep it in the background. Now let’s see what else we’ve got happening in this piece. What have we got here? Oh, that’s drums, how does it sound?

Na: Alright

I: Good. And what’s this bottom one?

Na: This one

I: Taiko drums, so those two work together do they?

Na: Yep

I: can we hear all three together?

She plays the piece

I: Is that getting close to what you wanted?

[16.57]

Na: No

I: No? What did you want? Or is this palm tree causing you too much trouble?
It is apparent that she has some preconception of what she wants to hear but she can’t achieve it. More importantly, she doesn’t think that she knows how to achieve it. This was to be the last revision of this series of pieces and she then moved onto her Blue series without resolving the issue. This didn’t appear to concern her; she had just done all she could with that piece and it was time to move on.

When asked about the comparative difficulties of working with a group of children in my music classes or with computers she replied:

Na: It was easier using the computer
I: Right, because …?

Five seconds of silence

Regardless of the difficulty I had in eliciting responses from Student Na throughout the study and her lack of ability or desire to articulate her own feelings or responses, it was apparent to me that she thoroughly enjoyed the study and made a valuable contribution to it and to my understandings about children’s music making.
Student R

Student R is in Grade 6, he has played the flute for two years but wouldn’t tell me how much he practices. He learnt through the school from the person who ran the school band. He is giving up the flute and will learn guitar next term. He has not taken any exams in the flute. His mother has a keyboard at home that he has played “once or twice” but no guitar yet. His flute belongs to the school so will have to be returned when he stops learning.

Student R did not know what I meant when I asked him about composing as the following transcription reveals:

I: Have you ever composed any music?
[0.55]
R: Um …What do you mean by that?
I: Made up any music, have you ever written anything?
R: Um … no

(17th Feb)

When asked about his favourite subjects at school he had to think quite hard before answering “sport” and then with further prompting “story writing”. He is “alright” at maths but likes making models in art saying that he is “better at art than maths”. Student R enjoys listening to CDs and named Jet, Taxi Ride and Three Doors Down as favourites. He listens to commercial radio stations Nova or Fox.

He indicated that he volunteered for this study because “it sounded like fun”. I can safely say that he did have fun throughout; this is reinforced by his comments during his final interview. These comments, which I present in the transcription below, also provide a wonderful insight into Student R’s motivation and compositional purpose:

I: Can you remember what you were trying to do when you were writing a piece? Say with the Titanic when you were drawing pictures or with Who Knows? Something you were trying to do, did you have an idea of what you wanted?

[11.38]
R: I was trying to make something sound good instead of bad
I: Right
R: But it didn’t matter if it was bad because I was still having fun
I: Okay, and by bad you mean, sounded …?
R: Sounded … awful (laughs). Not very good
I: Does that mean sounded not like you wanted it to sound?
R: Yes
I: Or … it probably means both doesn’t it
R: Yes

(1st Dec)

This is wonderful articulation of the fun element of play and what it meant to Student R from a compositional perspective. It didn’t matter how bad a piece sounded because
he was playing. That is not to say that he wasn’t thinking musically or wasn’t trying to make things sound good, as the following section of the same interview shows:

I: Did you know what you wanted it to sound like?

[12.06]
R: Not really, I just went with the …
I: You just knew what was good …
R: Yeah
I: … and what wasn’t good?
R: Yeah
I: So was it frustrating when you couldn’t make it sound like you wanted it to sound?
(Short pause)
R: Yes it was actually
I: What did you do about it?
R: I started again (laughs)
I: Started another piece, alright
R: Or I just fixed up that old bit

Student R enjoyed himself throughout the study and at times found it difficult to contain his enthusiasm. At times I became frustrated with him and his interactions with the other boys but he was, at all times, a good natured participant who was just very keen. In one interaction with him he quite honestly tells me that he is mucking around:

I go over to R and L
I: Are you working or mucking around
[11.44]
R: Mucking around
L: Working
I: Mucking around or playing around … R? There’s nothing wrong with playing around to make something happen that’s okay but if you’re just playing around trying not to make something happen then that’s not a good idea. Is it?
R: No … it just sounds funny

(3rd August)

There is some detailed discussion of his Titanic piece in Chapter X Typology. He was one of the students who persevered with drawing his music over a number of weeks. He then moved to a more melodic style in his collaborations with Student L. A number of the pieces they used in their album contained versions of known songs (We Three Kings, Row, Row, Row Your Boat, We’re off to see the Wizard) or had melodic features. In the piece Rock and Ropll (sic), Student R produces a rather lengthy solo using a banjo patch. He was very proud of this piece; the solo in particular.

Student R is the only child to be so confident and unshakable in this belief that everything he did was music; the following transcription presents his thoughts. It is interesting that he first had to think about the pieces that weren’t part of his album; but he decided they were, after all, music. The same applied to computer music. He had to think before deciding that it was, in fact, music.

I: Do you think that anything you wrote could be described as music?

(Thinks)

[10.50]
R: Yes
I: Okay. Anything in particular? All of it?
R: Yes. Oh, all of my ‘Who Knows’ songs
I: Yep. What about your other stuff?
R: Yeah, everything
I: And you’re quite happy, you don’t have any trouble with that being music?
R: Well some of it was computer so … but that was still music
I: Still music
R: Yes
I: I mean, I’m not saying if it was good music or bad music but it was still music
R: Yes, it’s still music
I: Why is it music?
[11.15]
R: Because it’s got sound and … um … sound’s good
I: Okay
(1st Dec)

He was also able to articulate his compositional process. He was unsure at first about whether or not he did approach all his compositions in the same way but on reflection decided that he did actually do the same thing for every composition.

I: Did you approach every piece of music in the same way?
(Silence)
I: Did you have a … would you say ‘I write a piece of music like this; I go … I right down the name, I do this or I do that’ or did you do things differently each time?

[12.41]
R: Did things differently each time
I: Right, but was there any sort of approach that you could use?

(He has been thinking)
R: Oh, it was all sort of the same actually because … but … it’s hard to describe

I: Try
[12.56]
R: Well … it was sort of the same … but it was different
I: come on
R laughs
R: Well … mmh …

(This is very difficult for him, he wants to answer because he knows there is something to say but he really can’t articulate it. I don’t want to put words into his mouth but I will have to help him out)
I: What was the same?

R: Every time I went to do a piece of music … I … had sort of the same approach. Like I thought ‘I want to write a piece of music that sounds good’

I: Yeah

R: But … ‘I also want to have some fun at the same time’

I: Right

R: Yes

(1st Dec)

This articulation of an approach to composition could not be more different from those proposed by Kratus and others. There is no preparation, incubation, illumination and verification. There is no exploration, development and repetition. It is the notion that he wants something that sounds good and that is fun to make – nothing more than that. If it doesn’t sound good he can make some changes but it doesn’t really matter as long as the second criterion of having fun is met. So here we can see that all important aspect of play, fun, being the single most important part of the compositional process for Student R. These are not glib, throw away comments either. True it is one interview with a twelve year old but his responses are considered and serious, he was reflecting and thinking. When he realised that he approached his work in the same (but different) way it was one of those wonderful ‘ahah’ moments when the observer can almost see ‘the light go on’.

In response to a question about what he thought he had learnt by doing the study, Student R replied:

R: I’ve learnt how to use Audacity and I’ve learnt how to use different programs on the computer, with Home Studio and I've learnt how to compose music

I: You’ve learnt how to compose music?

R: Yes

(1st Dec)
The notion that he has learnt how to compose music is interesting. He doesn’t expand on it but he is certain that he has learnt how to compose; much in the same way that Student Na is certain that she has learnt how to play the keyboard. Of course, he didn’t know what ‘compose’ was at the start of this project but he certainly has a clear idea now, and he has a clear idea of his own approaches and motivations, and his capacity as a composer.

**Summary**

In this chapter I have presented the children and the study itself. The stories of the children are, by necessity brief, but they do provide a picture of these children and the way they talk about the ways they think and act musically. The dramas and uncertainties of providing reliable computers provide some of the realities of the study and of contemporary schooling. The interruptions and intrusions into the study are also representations of what happens in many schools throughout Australia and probably throughout the world. Schools are dynamic places filled with children, they frequently do not have enough space or resources so teaching and working in schools in full of compromise.
Chapter 5

A Typology of Compositional Approaches Built on Play

In order to understand the meaning of artistic products, we have to forget them for a time, to turn aside from them and have recourse to the ordinary forces and conditions of experience that we do not usually regard as aesthetic (Dewey, 1980, p. 4).

The role of play in this study is crucial. The understanding of that role to the study, the ways it influenced what the children did and why they did those things, and in the way they interacted with each other, their environment, their music and with me, helps frame a developing understanding of children’s compositional processes and their perceptions and interactions with music.

In my analysis of data and in my observation of events as they occurred in this study, I became more and more certain that the children’s main play activity was one of mucking around. The most disappointing thing for me as a researcher was that I failed to find in the literature a celebration of ‘mucking around’. Herron & Sutton-Smith (1971) discuss ‘clowning’, and that comes close to my notion of mucking around. But clowning requires an audience and is seen as a response to a situation; whether that situation is a mistake that needs to be exaggerated to be made funny, or the need to adopt a different persona to deal with an aspect of life. Perhaps mucking around does that as well but I think it is less specific. Papert’s (1993b) notion of ‘tinkering’ taken from bricolage is perhaps closer to mucking around than clowning in this case although, to me, tinkering implies fiddling around in order to solve a problem. There is still a difference; the children in the present study weren’t always clowning, they weren’t always tinkering. Even though they might not have been mucking around all the time, this was a significant part of what they were doing; this was a major form of their play and a major contributor to their compositions and interactions. In my observation and interpretation, and in their own words, the children were enjoying what they were doing and were having fun enjoying it. I saw their mucking around as part of the celebration of the childhood experience; a
pleasurable experience that was, in this case, supported by the environment and the structure of the activities.

The significance of play to this study and the way the children played throughout it caused me to consider ways in which I could present it that would highlight the importance of that behaviour. One such way of achieving that is through a typology of compositional styles.

The typology of compositional styles that I suggest in this section is built on play. The idea of the importance of play is not my own, although I believe that I approach it somewhat differently to that in other research mentioned in this work. Play is an important part of Nilsson’s (2003) understanding and analysis of children’s compositions. On his own and with Folkestad (Nilsson & Folkestad, 2005), and using play as one of its foundations, he creates and describes an “ecocultural perspective, in which learning, improvisation and creativity are seen as taking place within everyday activities, and as a basic human function” (p. 24). This approach makes perfect sense to me and it has guided my own thinking. I do not agree with it in its entirety or with some of the interpretations of their theoretical frameworks (especially within the context of my own study and in the interpretation of Gibson and affordance). Most importantly, I depart from it in one critical aspect; the centrality of play. Play to Nilsson and to Nilsson and Folkestad is one of the four theoretical areas used to develop their ecocultural perspective, for me it is central to everything that happened. In the present study play had a bearing on all activities and relationships. It relates to the compositions, to the compositional processes and to the relationship with the environment.

I have some reservations about typifying children’s compositions since to do so somehow acknowledges that there is one process (or one for each type) that can be applied to children; but that it not my purpose here. I am interested in a typology for a number of reasons:

- To help in the analysis and discussion of the compositions in question
• To situate this study contextually with previous literature, in particular Nilsson & Folkestad (2005) and Folkestad, Hargreaves, & Lindström (1998)
• To highlight the significance of particular aspects of the compositional process
• To help differentiate between children’s compositional approaches and those of adults
• To provide a further context for the understanding of the relationship between child and computer
• To highlight how the computer and the computer environment became new playthings for the children and affor ded new ways of playing
• To help understand children’s musical ways of knowing

In presenting this typology I am still not entirely happy with this approach but believe the benefits it offers outweigh the criticisms that it invites.

As discussed in Chapter 2, Nilsson and Folkestad (2005) present five variations of children’s computer-based compositions. These are presented here:

• Putting the synthesiser and the computer in foreground of the activity
• Using creative music making as a means to express personal fantasies and emotions
• Putting the playing of the instrument in the foreground of the activity
• Placing the music itself in the foreground of the activity
• Putting the task in the foreground (p. 25)

In my study all compositions appeared to have some basis in play; perhaps most of childhood has such a basis. After I had got over my desire to enforce structure, the children were free to play or just approached everything as play. Accordingly, I present a typology of compositional approaches based in play.

In Chapter 3 I describe the data collection and analysis processes, and the creation of a spreadsheet that lists all of the compositions and details specific features of each one. This spreadsheet is presented as Table 5.1. It is a very large inclusion but one
that documents the detailed process of analysis and points towards the identification of my typology. It also provides a detailed overview of the study itself and of the children and their approaches. It presents every composition by date, composer, and title. It also presents my notes about each piece and about things that were happening at the time in the study.

<table>
<thead>
<tr>
<th>Date</th>
<th>Composer</th>
<th>Title</th>
<th>Notes</th>
<th>Session notes</th>
<th>Significant</th>
<th>Type</th>
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<tbody>
<tr>
<td>02/03/04</td>
<td>A</td>
<td>Come back and I am Chris Walken</td>
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<td>C</td>
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<td></td>
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<td>missing audio - accordion complete</td>
<td></td>
<td>Sound/Voice</td>
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<tr>
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<td>C, K and Na</td>
<td>KCN</td>
<td>2 audio tracks. Phone conversation and announcements</td>
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<td>Sound</td>
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<td>Sound</td>
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<td>KCN</td>
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<td>Oh the places you will go</td>
<td>Reading from a book</td>
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<td>Student K1</td>
<td>Horizontal</td>
<td>Y</td>
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<td>16/03/04</td>
<td>N and R</td>
<td>Shrek</td>
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<td></td>
<td>Computer /Sounds</td>
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<td>Sound</td>
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<td>N and R</td>
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<td>A and L</td>
<td>DJ Music</td>
<td>1st recorded Smoke on the water attempt</td>
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<td>C, K and</td>
<td>CNK</td>
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<td>Y</td>
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<td>NA</td>
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<td>A and R</td>
<td>Student A and Student R</td>
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<td>Student A and Student R stuff</td>
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<td>Use of Japanese instrumentation</td>
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<td>CNK</td>
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<td>Computer /Sounds</td>
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<td>25/05/04</td>
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<td>Student K</td>
<td>Evidence of sequential thinking</td>
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<tr>
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<td>L</td>
<td>drogon (sic) 25</td>
<td>Only 'fire' track recorded</td>
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<td>25/05/04</td>
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<td>Y</td>
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<td></td>
<td>Student N</td>
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<tr>
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<td>The Bark</td>
<td>empty</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>Student N</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>25/05/04</td>
<td>Na</td>
<td>Dragon1</td>
<td>Start of further development</td>
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<td>Melody</td>
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<td>25/05/04</td>
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<td>Turtle1</td>
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<tr>
<td>01/06/04</td>
<td>C</td>
<td>1st of June</td>
<td></td>
<td></td>
<td></td>
<td>Sound</td>
</tr>
<tr>
<td>Date</td>
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<td>Title</td>
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<tr>
<td>01/06/04</td>
<td>C</td>
<td>1st of June 1</td>
<td>Completely different from above</td>
<td></td>
<td></td>
<td>Melody/Sound</td>
</tr>
<tr>
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<td>C</td>
<td>1st of June 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>01/06/04</td>
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<td>1st of June</td>
<td></td>
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<td></td>
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<tr>
<td>01/06/04</td>
<td>K</td>
<td>1st of June 2</td>
<td>Compositional/Sound/Story</td>
<td></td>
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<tr>
<td>01/06/04</td>
<td>K</td>
<td>1st of June 3</td>
<td>Compositional/Sound/Story</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01/06/04</td>
<td>K</td>
<td>1st of June 4</td>
<td>Compositional/Sound/Story</td>
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<td></td>
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<td>01/06/04</td>
<td>K</td>
<td>1st of June 5</td>
<td>Compositional/Sound/Story</td>
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<td>K</td>
<td>1st of June 6</td>
<td>Definite sequence of development into a linear 'story'</td>
<td></td>
<td>Y</td>
<td>Compositional/Sound/Story</td>
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<tr>
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<td>L</td>
<td>Dragon1</td>
<td>Only 'fire' track recorded - not the same as dragon25</td>
<td></td>
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<td>Melody</td>
</tr>
<tr>
<td>01/06/04</td>
<td>L</td>
<td>Smock on the Water</td>
<td></td>
<td></td>
<td>Y</td>
<td>MELODY/GENRE</td>
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<td>01/06/04</td>
<td>L</td>
<td>Smock on the Water2</td>
<td>Same with random notes</td>
<td></td>
<td></td>
<td>MELODY/GENRE</td>
</tr>
<tr>
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<td>N</td>
<td>1st June by Student N</td>
<td>&quot;Hot Cross Buns&quot;</td>
<td></td>
<td>Y</td>
<td>Melody/familiar</td>
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<tr>
<td>01/06/04</td>
<td>Na</td>
<td>Student Na Dragon2</td>
<td>Development</td>
<td></td>
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<td>SOUND/COMPOSITION</td>
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<td>01/06/04</td>
<td>Na</td>
<td>Student Na Dragon3</td>
<td>Further development</td>
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<td>Student Na Dragon1</td>
<td>Not the same as Dragon1 above</td>
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<tr>
<td>01/06/04</td>
<td>R</td>
<td>Turtle</td>
<td>Developing sequence</td>
<td></td>
<td>Y</td>
<td>Melody/computer</td>
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<tr>
<td>01/06/04</td>
<td>R</td>
<td>Turtle 1</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>01/06/04</td>
<td>R</td>
<td>Turtle 2</td>
<td></td>
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<tr>
<td>01/06/04</td>
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<td>Turtle 3</td>
<td>Deleted most tracks</td>
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<td>Date</td>
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<td>Title</td>
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<td>Significant</td>
<td>Type</td>
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<td>08/06/04</td>
<td>A</td>
<td>dragon sounds</td>
<td>Same as dragon sounds 25th May but tracks staggered</td>
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<td>Y</td>
<td>Melody</td>
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<td>New Dragon</td>
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<td>Melody</td>
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<td>08/06/04</td>
<td>A</td>
<td>The Dragon Complete</td>
<td>Completely different from above</td>
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<td>Y</td>
<td>Melody</td>
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<tr>
<td>08/06/04</td>
<td>C</td>
<td>8th of June</td>
<td>Interesting note and sound choices</td>
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<td>Genre/Sound/Melody</td>
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<td>C</td>
<td>Court</td>
<td>No data</td>
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<td>Genre</td>
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<td>08/06/04</td>
<td>N</td>
<td>8th June by Student N</td>
<td>Overlaid track work</td>
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<td>Student Na Dragon 3</td>
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<td>Student Na Dragon 4</td>
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<td>Y</td>
<td>SOUND</td>
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<td>Student Na Dragon 6</td>
<td>Volume adjustment</td>
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<td>More volume adjustment</td>
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<td>SOUND</td>
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<td>08/06/04</td>
<td>R</td>
<td>Turtle 4</td>
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<td>Good example of muted tracks</td>
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<tr>
<td>08/06/04</td>
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<td>Turtle 5</td>
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<td>Drums added</td>
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<td>A</td>
<td>Student A is mad no</td>
<td>Use of pattern brush and rich chords</td>
<td></td>
<td>Y</td>
<td>Look</td>
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<td>Student A is mad not</td>
<td>Same as above</td>
<td></td>
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<td>Look</td>
</tr>
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<td>15/06/04</td>
<td>A</td>
<td>The Dragon Complete1</td>
<td>Has changed some of the notes - and new rhythm track</td>
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<td></td>
<td>Melody</td>
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<td>15/06/04</td>
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<td>The Dragon Complete2</td>
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<tr>
<td>Date</td>
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<td>Notes</td>
<td>Session notes</td>
<td>Significant</td>
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<td>----------------------------------------------------------------------</td>
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</tr>
<tr>
<td>15/06/04</td>
<td>A</td>
<td>Made up</td>
<td>A definite melody using black notes</td>
<td></td>
<td>Y</td>
<td>Melody</td>
</tr>
<tr>
<td>15/06/04</td>
<td>C</td>
<td>Student C</td>
<td>Smiley face drawing</td>
<td>first 'drawn' music</td>
<td>Y</td>
<td>Look</td>
</tr>
<tr>
<td>15/06/04</td>
<td>C</td>
<td>8th June</td>
<td>Same as 8th June above</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>15/06/04</td>
<td>K</td>
<td>KS2</td>
<td>Same as 1st June6</td>
<td></td>
<td>Compositio...</td>
<td>Sound</td>
</tr>
<tr>
<td>15/06/04</td>
<td>K</td>
<td>Drum Sounds</td>
<td>Just a bass drum beat - found</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15/06/04</td>
<td>N</td>
<td>1st June by Student N</td>
<td>Completely different from above - looks like the start of a rock concert</td>
<td></td>
<td>GENRE</td>
<td></td>
</tr>
<tr>
<td>15/06/04</td>
<td>N</td>
<td>1st June by Student N1#</td>
<td>continuation</td>
<td></td>
<td>GENRE</td>
<td></td>
</tr>
<tr>
<td>15/06/04</td>
<td>N</td>
<td>16th June by Student N2#</td>
<td>continuation</td>
<td></td>
<td>GENRE</td>
<td></td>
</tr>
<tr>
<td>15/06/04</td>
<td>N</td>
<td>16th June by Student N3#</td>
<td>continuation - track 4 now drums but contains no data</td>
<td></td>
<td>GENRE</td>
<td></td>
</tr>
<tr>
<td>15/06/04</td>
<td>Na</td>
<td>Student Na1</td>
<td>Huge, held chord clusters - use of pattern brush - had selected an audio track</td>
<td></td>
<td>COMPUTE...</td>
<td></td>
</tr>
<tr>
<td>15/06/04</td>
<td>Na</td>
<td>Student Na Dragon 8</td>
<td>same as Student Na Dragon 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15/06/04</td>
<td>Na</td>
<td>Student Na Dragon 9</td>
<td>Same</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15/06/04</td>
<td>R</td>
<td>Turtle 8</td>
<td>Same as Turtle 8 above</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15/06/04</td>
<td>R</td>
<td>Turtle 9</td>
<td>Same as Turtle 8 with two additional tracks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15/06/04</td>
<td>R</td>
<td>Turtle 10</td>
<td>A cleaned up version. Focuses on melody</td>
<td>Clear demonstr...</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>13/07/04</td>
<td>A</td>
<td>Student A is mad no 2</td>
<td>Same as June version</td>
<td></td>
<td>Look</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Composer</td>
<td>Title</td>
<td>Notes</td>
<td>Session notes</td>
<td>Significant</td>
<td>Type</td>
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<td>----------------------------------------------------------------------</td>
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<tr>
<td>13/07/04</td>
<td>A</td>
<td>Student A is mad no 3</td>
<td>Written word and started drawing</td>
<td></td>
<td>Y</td>
<td>Look</td>
</tr>
<tr>
<td>13/07/04</td>
<td>A</td>
<td>Student A is mad no 4</td>
<td>Written word and started drawing</td>
<td></td>
<td>Look</td>
<td></td>
</tr>
<tr>
<td>13/07/04</td>
<td>N</td>
<td>Golfer 1</td>
<td>Overlaid drawing of golfer</td>
<td>Look/(sound)</td>
<td></td>
<td></td>
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<tr>
<td>13/07/04</td>
<td>N</td>
<td>13th July by Student N</td>
<td>no data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13/07/04</td>
<td>N</td>
<td>Golfer 2</td>
<td>Blank tracks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13/07/04</td>
<td>R</td>
<td>Boat hitting (sic) rock</td>
<td>Drawn into audio track</td>
<td>Look</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13/07/04</td>
<td>R</td>
<td>Boat hitting (sic) rock 2</td>
<td>Development of above. This time in a midi track</td>
<td>Look</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>A</td>
<td>Bad</td>
<td>The cwp version of 'Long play' below. Only contains midi data and two missing audio tracks</td>
<td></td>
<td></td>
<td>Computer</td>
</tr>
<tr>
<td>20/07/04</td>
<td>A</td>
<td>Student A is mad no 5</td>
<td>Written word and started drawing - tempo at 250</td>
<td>Look</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>A</td>
<td>Bad Thing</td>
<td>Experimentation with paint brush</td>
<td></td>
<td>Y</td>
<td>Look</td>
</tr>
<tr>
<td>20/07/04</td>
<td>A</td>
<td>Long Play</td>
<td>midi and two tracks of audio sfx. Mostly R and A laughing and making noises</td>
<td></td>
<td>Y</td>
<td>Sound/Computer</td>
</tr>
<tr>
<td>20/07/04</td>
<td>C</td>
<td>Little Princess</td>
<td>Same as 'Student C (15/6/04)'</td>
<td></td>
<td></td>
<td>Look</td>
</tr>
<tr>
<td>20/07/04</td>
<td>C</td>
<td>palm trees</td>
<td>Picture of a palm tree</td>
<td></td>
<td></td>
<td>Look</td>
</tr>
<tr>
<td>20/07/04</td>
<td>C</td>
<td>palm trees2</td>
<td>Whole tree drawn in track three</td>
<td></td>
<td></td>
<td>Look</td>
</tr>
<tr>
<td>Date</td>
<td>Composer</td>
<td>Title</td>
<td>Notes</td>
<td>Session notes</td>
<td>Significant</td>
<td>Type</td>
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</tr>
<tr>
<td>20/07/04</td>
<td>C</td>
<td>palm trees3</td>
<td>Alteration to track 2 and additional track 5</td>
<td>Look</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>C</td>
<td>palm trees4</td>
<td>Same as above - no change</td>
<td>Look</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>C</td>
<td>palm trees5</td>
<td>Sun added</td>
<td>Look</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>C</td>
<td>PALMTREE</td>
<td>completely empty</td>
<td>Look</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>C</td>
<td>Little Princess 2</td>
<td>Extension of Little Princess</td>
<td>Look</td>
<td></td>
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</tr>
<tr>
<td>20/07/04</td>
<td>K</td>
<td>Hi</td>
<td>Just the words Hi!! And Student K!!</td>
<td>Look</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>K</td>
<td>Student K</td>
<td>Identical to the above</td>
<td>Look</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>K</td>
<td>Student K2</td>
<td>Continuation of above</td>
<td>Look</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>K</td>
<td>Smiley face</td>
<td>Drawn face</td>
<td>Look</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>L</td>
<td>face</td>
<td>Thick notation</td>
<td>Look</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>L</td>
<td>Bridg (sic)</td>
<td>Very dense bridge drawing</td>
<td>Look/sound</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>L</td>
<td>bridg2</td>
<td>Deliberate thinning of density, new track added</td>
<td>Look/sound</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>N</td>
<td>Windy3</td>
<td>More patch changes and a bridge drawn</td>
<td>Look</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>N</td>
<td>Windy4</td>
<td>Half of bridge removed and drum track added</td>
<td>Look/sound</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>N</td>
<td>Windy</td>
<td>1 audio track with midi data and interesting melody in midi track</td>
<td>Sound</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>N</td>
<td>Windy1</td>
<td>Same as above but patch names assigned</td>
<td>Sound</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>N</td>
<td>Windy2</td>
<td>Same as above - one patch changed</td>
<td>Sound</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>N</td>
<td>Windy5</td>
<td>Same as above</td>
<td>Sound</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>N</td>
<td>1</td>
<td>No data</td>
<td>Look</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>Na</td>
<td>Palm Tree</td>
<td>2 tracks each containing drawings - palm trees and waves</td>
<td>LOOK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/07/04</td>
<td>R</td>
<td>Titanic</td>
<td>Picture of titanic</td>
<td>Look</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Composer</td>
<td>Title</td>
<td>Notes</td>
<td>Session notes</td>
<td>Significant</td>
<td>Type</td>
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<td>---------------------------------------------------</td>
<td>----------------------------------------</td>
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</tr>
<tr>
<td>20/07/04</td>
<td>R</td>
<td>Dolphin</td>
<td>Titanic with dolphins</td>
<td>My dolphin sounds like a shark'</td>
<td>Y</td>
<td>Look</td>
</tr>
<tr>
<td>20/07/04</td>
<td>R</td>
<td>Dolphin</td>
<td>Same as above - audio loaded</td>
<td></td>
<td>Look</td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>A</td>
<td>Hippno psyco (sic)</td>
<td>Heavy use of pitch wheel.</td>
<td>He was very excited by this piece</td>
<td>Y</td>
<td>Sound/Co</td>
</tr>
<tr>
<td>27/07/04</td>
<td>A</td>
<td>Hippno psyco (sic) 2</td>
<td>Drum track imported</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>C</td>
<td>Sun</td>
<td>Same as Palm tree 5 with circular sun added as separate track. Patches assigned</td>
<td></td>
<td>Look</td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>C</td>
<td>Fish</td>
<td>Same as above with 2 fish added (very low)</td>
<td></td>
<td>Look</td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>C</td>
<td>Beach</td>
<td>Back to Sun</td>
<td></td>
<td>Look</td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>K</td>
<td>Student K3</td>
<td>Continuation of K2; 2nd track added</td>
<td></td>
<td>Look</td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>K</td>
<td>Student K4</td>
<td>2nd track shifted and intensified considerati on of both look and alignment</td>
<td>Y</td>
<td>Look/Sound</td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>K</td>
<td>Student K5</td>
<td>2nd track data deleted. 3rd track (house) added.</td>
<td></td>
<td>Look/Sound</td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>L</td>
<td>x2</td>
<td>Same with 'space invaders' drawn</td>
<td></td>
<td>Y</td>
<td>Look/Sou nd</td>
</tr>
<tr>
<td>27/07/04</td>
<td>L</td>
<td>Rugrats</td>
<td>Rugrats theme with drum track</td>
<td></td>
<td>Melody/Familiar</td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>L</td>
<td>Rugrats2</td>
<td>Same but with drawing of guitar added</td>
<td></td>
<td>Melody/Familiar/Look</td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>L</td>
<td>x1</td>
<td>6 bars of D/D flat dissonance</td>
<td></td>
<td>Look</td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>N</td>
<td>Windy 3</td>
<td>Same as Windy 3 above without the 'bridge' drawing</td>
<td></td>
<td>Computer</td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>N</td>
<td>Windy 42</td>
<td>New track with 3 layers</td>
<td></td>
<td>Computer</td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>N</td>
<td>Windy 42b</td>
<td>Same with blank audio track (helicopter)</td>
<td></td>
<td>Computer</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Composer</td>
<td>Title</td>
<td>Notes</td>
<td>Session notes</td>
<td>Significant</td>
<td>Type</td>
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</tr>
<tr>
<td>27/07/04</td>
<td>Na</td>
<td>Student Na</td>
<td>Lots of very high sections. Can't make sense of it</td>
<td></td>
<td>LOOK? Computer</td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>R</td>
<td>Titanic2</td>
<td>Identical to titanic above</td>
<td></td>
<td>Look</td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>R</td>
<td>Titanic3</td>
<td>Two 'wave' tracks added. Tempo doubled</td>
<td></td>
<td>Look</td>
<td></td>
</tr>
<tr>
<td>27/07/04</td>
<td>R</td>
<td>Titanic4</td>
<td>Dolphin pasted from another track</td>
<td></td>
<td>Look</td>
<td></td>
</tr>
<tr>
<td>03/08/04</td>
<td>K</td>
<td>Student K1</td>
<td>Use of Crocodile rock theme and drum track</td>
<td></td>
<td>Look/Sound/Familiar</td>
<td></td>
</tr>
<tr>
<td>03/08/04</td>
<td>K</td>
<td>Student K2</td>
<td>Fourth track added</td>
<td></td>
<td>Look/Sound/Familiar</td>
<td></td>
</tr>
<tr>
<td>03/08/04</td>
<td>L</td>
<td>Rugrats3</td>
<td>Guitar drawing gone and two drum tracks used. One drum track assigned baritone sax sound</td>
<td>Use of baritone sax to play drum track</td>
<td>Y</td>
<td>MELODY/SOUND</td>
</tr>
<tr>
<td>03/08/04</td>
<td>L</td>
<td>Rugrats4</td>
<td>Same as above with 1st 4 bars of theme copied and pasted to end of theme track</td>
<td></td>
<td>MELODY/SOUND</td>
<td></td>
</tr>
<tr>
<td>03/08/04</td>
<td>N</td>
<td>Hard Rock118 – Heavy Metal</td>
<td>Imported drum track and frenetic bass line (played)</td>
<td>Bass line - length and style</td>
<td>Y</td>
<td>Genre</td>
</tr>
<tr>
<td>03/08/04</td>
<td>N</td>
<td>Windy3</td>
<td>Same as windy3 (20th July) but with creature added below bridge</td>
<td></td>
<td>Look/computer</td>
<td></td>
</tr>
<tr>
<td>03/08/04</td>
<td>R</td>
<td>Dolpen3</td>
<td>Same as titanic but with a re-drawn and repositioned (pitch) dolphin drawing</td>
<td></td>
<td>Look/sound</td>
<td></td>
</tr>
<tr>
<td>03/08/04</td>
<td>R</td>
<td>The3 Finished Titanic</td>
<td>Same as above with new dolphin patch and tempo playing at</td>
<td>Actually named as finished</td>
<td>Y</td>
<td>Look/sound</td>
</tr>
<tr>
<td>Date</td>
<td>Composer</td>
<td>Title</td>
<td>Notes</td>
<td>Session notes</td>
<td>Significant</td>
<td>Type</td>
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</tr>
<tr>
<td>10/08/04</td>
<td>A</td>
<td>Hippno psyco (sic) 3</td>
<td>New drums repeated as trumpet. Tempo change</td>
<td>Y</td>
<td></td>
<td>Computer /Genre</td>
</tr>
<tr>
<td>10/08/04</td>
<td>A</td>
<td>Hippno psyco (sic) 4</td>
<td>Another new drum</td>
<td></td>
<td></td>
<td>Computer /Genre</td>
</tr>
<tr>
<td>10/08/04</td>
<td>C</td>
<td>Waves3</td>
<td>Definite melody added</td>
<td>Melodic</td>
<td>Y</td>
<td>Look/Melody</td>
</tr>
<tr>
<td>10/08/04</td>
<td>C</td>
<td>Waves</td>
<td>Based on Beach with new waves</td>
<td></td>
<td></td>
<td>Look/Sound</td>
</tr>
<tr>
<td>10/08/04</td>
<td>C</td>
<td>Waves2</td>
<td>New track and patch change</td>
<td></td>
<td></td>
<td>Look/Sound</td>
</tr>
<tr>
<td>10/08/04</td>
<td>K</td>
<td>Student K1</td>
<td>Continuation of Student K1 above. 2 new tracks</td>
<td></td>
<td>Y</td>
<td>Look/Sound/Familiar</td>
</tr>
<tr>
<td>10/08/04</td>
<td>K</td>
<td>Student K2</td>
<td>Timp track and accordion track removed. New track added (another drum style). Tempo change at the end</td>
<td>Demonstrates considerable thought about product</td>
<td>Y</td>
<td>Look/Sound/Familiar</td>
</tr>
<tr>
<td>10/08/04</td>
<td>K</td>
<td>Student K3</td>
<td>No noticeable change from above</td>
<td></td>
<td></td>
<td>Look/Sound/Familiar</td>
</tr>
<tr>
<td>10/08/04</td>
<td>K</td>
<td>Student K4</td>
<td>Rearranged start, moved some notes, added ending notes</td>
<td>Demonstrates attempt at completion</td>
<td>Y</td>
<td>Look/Sound/Familiar</td>
</tr>
<tr>
<td>10/08/04</td>
<td>L</td>
<td>Rugrats6</td>
<td>New 'drum' track - electric muted guitar. Changed beginning</td>
<td></td>
<td></td>
<td>MELODY /SOUND/ Computer ?</td>
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<tr>
<td>10/08/04</td>
<td>N</td>
<td>Hard Rock118 – Heavy Metal 7</td>
<td>same as August 3. Audio track added but no data saved</td>
<td></td>
<td>Y</td>
<td>Genre</td>
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<tr>
<td>10/08/04</td>
<td>Na</td>
<td>Piano Roll</td>
<td>continued from Student Na (27th July). Very interesting drums</td>
<td>repeated drum pattern</td>
<td>Y</td>
<td>LOOK/SOUND</td>
</tr>
<tr>
<td>Date</td>
<td>Composer</td>
<td>Title</td>
<td>Notes</td>
<td>Session notes</td>
<td>Significant Type</td>
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<tr>
<td>10/08/04</td>
<td>Na</td>
<td>Palm tree</td>
<td>Continued from Palm Tree 20th July. New pianistic track and very interesting rhythmic/melodic track</td>
<td>style developing interesting rhythmic/melodic approach</td>
<td>Y</td>
<td>LOOK/SOUND/INSTRUMENT</td>
</tr>
<tr>
<td>10/08/04</td>
<td>Na</td>
<td>Student NaDragon9</td>
<td>Same as 15th June</td>
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<tr>
<td>10/08/04</td>
<td>R</td>
<td>Titanic</td>
<td>Old dolphin used with appropriate sound - definite ending</td>
<td></td>
<td>Y</td>
<td>Look/sound</td>
</tr>
<tr>
<td>17/08/04</td>
<td>C</td>
<td>Waves1</td>
<td>similar to last week. Melody removed, bass line added</td>
<td></td>
<td>Look/Melody</td>
<td></td>
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<tr>
<td>17/08/04</td>
<td>C</td>
<td>Waves2</td>
<td>Bass changed to E with C,C,D flat melody</td>
<td></td>
<td>Look/Sound</td>
<td></td>
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<tr>
<td>17/08/04</td>
<td>C</td>
<td>Waves3</td>
<td>Above melody removed. Woodblock single note rhythm instead</td>
<td></td>
<td>Look/Sound</td>
<td></td>
</tr>
<tr>
<td>17/08/04</td>
<td>C</td>
<td>Waves4</td>
<td>Same as Waves1. New empty track</td>
<td>Reverts to old version</td>
<td>Y</td>
<td>Look/Sound</td>
</tr>
<tr>
<td>17/08/04</td>
<td>C</td>
<td>Waves</td>
<td>Waves3 with 2 note bell chord throughout</td>
<td>Effective final version</td>
<td>Y</td>
<td>Look/Sound</td>
</tr>
<tr>
<td>17/08/04</td>
<td>K</td>
<td>Student K4</td>
<td>Continuation - extended scale sequence in track 7</td>
<td>changes indicate a level of engageme nt with the musical outcome or at least the process of composition</td>
<td>Y</td>
<td>Look/Sound/Familiar</td>
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<tr>
<td>17/08/04</td>
<td>K</td>
<td>untitled</td>
<td>A silent midi piece</td>
<td>very keen to use 4'32&quot;</td>
<td>Y</td>
<td>Sound</td>
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<td>17/08/04</td>
<td>K</td>
<td>untitled audio</td>
<td>Audio recorded from background</td>
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<td>Y</td>
<td>Sound</td>
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<tr>
<td>17/08/04</td>
<td>Na</td>
<td>Palm tree</td>
<td>Revision of above version. Tracks swapped</td>
<td></td>
<td></td>
<td>Look/sound</td>
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192
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<thead>
<tr>
<th>Date</th>
<th>Composer</th>
<th>Title</th>
<th>Notes</th>
<th>Session notes</th>
<th>Significant Type</th>
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<tbody>
<tr>
<td>17/08/04</td>
<td>Na</td>
<td>Blue</td>
<td>Trying to compose to a suggested title</td>
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<td>Sound/composition/instrument?</td>
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<tr>
<td>24/08/04</td>
<td>K</td>
<td>Student K Song Done</td>
<td>Still using crocodile rock tune</td>
<td>Same as Student K4</td>
<td>Look/Sound/Familiar</td>
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<tr>
<td>24/08/04</td>
<td>K</td>
<td>Blue</td>
<td>Just me testing mic</td>
<td>First Audacity</td>
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<td>24/08/04</td>
<td>L and R</td>
<td>Blue2</td>
<td>Add a clap track - don't listen as they clap</td>
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<td>MELODY/COMPOSING</td>
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<tr>
<td>24/08/04</td>
<td>L and R</td>
<td>Blue3</td>
<td>Added piano chords</td>
<td>Student R plays without hearing the originals</td>
<td>MELODY/COMPOSING</td>
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<tr>
<td>24/08/04</td>
<td>L and R</td>
<td>Blue4</td>
<td>Adjusted levels</td>
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<td>MELODY/COMPOSING</td>
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<td>24/08/04</td>
<td>L and R</td>
<td>Blue</td>
<td>Student L singing and imported drum track</td>
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<td>MELODY/GENRE</td>
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<tr>
<td>24/08/04</td>
<td>L and R</td>
<td>Blue Mistake</td>
<td>no data</td>
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<tr>
<td>24/08/04</td>
<td>Na</td>
<td>Blue</td>
<td>Repeated patterns in 3 tracks</td>
<td></td>
<td>Composition</td>
</tr>
<tr>
<td>24/08/04</td>
<td>Na</td>
<td>Blue3</td>
<td>Identical to above</td>
<td></td>
<td></td>
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<tr>
<td>31/08/04</td>
<td>A and N</td>
<td>Hard Rock 118- Heavy Metal</td>
<td>Imported drum pattern – not the same name. Played in bass line</td>
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<td>Genre/Computer</td>
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<tr>
<td>31/08/04</td>
<td>A and N</td>
<td>Hard Rock 118- Heavy Metal 1</td>
<td>Same as above with lead riff played in using Bass-Id patch</td>
<td></td>
<td>Genre/Computer</td>
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<tr>
<td>31/08/04</td>
<td>A and N</td>
<td>Yellow</td>
<td>Whistle and ‘sing/say’</td>
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<td>Melody/Computer</td>
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<td>31/08/04</td>
<td>A and N</td>
<td>Red</td>
<td>Audacity - no data</td>
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<tr>
<td>31/08/04</td>
<td>C</td>
<td>Pink2</td>
<td>Added accompaniment</td>
<td></td>
<td>Composition</td>
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<tr>
<td>31/08/04</td>
<td>C</td>
<td>Pink3</td>
<td>added fourth</td>
<td></td>
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<tr>
<td>Date</td>
<td>Composer</td>
<td>Title</td>
<td>Notes</td>
<td>Session notes</td>
<td>Significant</td>
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<tr>
<td>31/08/04</td>
<td>C</td>
<td>Pink4</td>
<td>Melody changed to four ascending crotchets from C - muted 2nd track</td>
<td></td>
<td>y</td>
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<tr>
<td>31/08/04</td>
<td>C</td>
<td>Pink5</td>
<td>Track 2 is now a single final note C that almost fits with the last note of the melody</td>
<td></td>
<td>y</td>
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<tr>
<td>31/08/04</td>
<td>C</td>
<td>Pink5</td>
<td>melody line only - sounds like grade 1 piano piece</td>
<td></td>
<td>y</td>
</tr>
<tr>
<td>31/08/04</td>
<td>K</td>
<td>Blue</td>
<td>Imported sounds from very early on</td>
<td>Audio files missing</td>
<td></td>
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<tr>
<td>31/08/04</td>
<td>K</td>
<td>Blue</td>
<td>Imported sounds from very early on</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31/08/04</td>
<td>K</td>
<td>Pink</td>
<td>Imported sounds from very early on</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31/08/04</td>
<td>L and R</td>
<td>Blue5 mix</td>
<td>mp3 mix down - good vocal levels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31/08/04</td>
<td>L and R</td>
<td>Blue4</td>
<td>Same as last week - low levels</td>
<td></td>
<td></td>
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<tr>
<td>31/08/04</td>
<td>L and R</td>
<td>bear1</td>
<td>First line of 'bear necessities' - sung</td>
<td></td>
<td></td>
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<tr>
<td>07/09/04</td>
<td>A and N</td>
<td>Hard Rock 114 – Open Hat</td>
<td>3 drum tracks and N singing the guitar part</td>
<td></td>
<td>y</td>
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<tr>
<td>07/09/04</td>
<td>A and N</td>
<td>Hard Rock 114 – Open Hat2</td>
<td>3 drum tracks and N singing different guitar part</td>
<td></td>
<td>y</td>
</tr>
<tr>
<td>07/09/04</td>
<td>A and N</td>
<td>Dead Rock</td>
<td>same as above with played in bass line</td>
<td></td>
<td>y</td>
</tr>
<tr>
<td>07/09/04</td>
<td>C</td>
<td>Pink5</td>
<td>identical to pink5 last week</td>
<td></td>
<td></td>
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<tr>
<td>Date</td>
<td>Composer</td>
<td>Title</td>
<td>Notes</td>
<td>Session notes</td>
<td>Significant</td>
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<td>--------------</td>
<td>----------------------------------------------------------------------</td>
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<tr>
<td>07/09/04</td>
<td>C and K</td>
<td>Things</td>
<td>three blank tracks</td>
<td></td>
<td></td>
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<tr>
<td>07/09/04</td>
<td>K</td>
<td>Pink Done</td>
<td>More purposeful manipulation of sounds</td>
<td></td>
<td>Y</td>
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<tr>
<td>07/09/04</td>
<td>L and R</td>
<td>Bear2</td>
<td>Added guitar and drums</td>
<td>four different tempos all played at once - attempted use of ‘Zebra’</td>
<td>Y</td>
</tr>
<tr>
<td>07/09/04</td>
<td>L and R</td>
<td>Wizard (sic) of Oz</td>
<td>R singing - a bit made up</td>
<td></td>
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<tr>
<td>07/09/04</td>
<td>Na</td>
<td>Blue2</td>
<td>same as Blue 3 above but with added bass track</td>
<td></td>
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<tr>
<td>07/09/04</td>
<td>Na</td>
<td>Blue4</td>
<td>identical to blue2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07/09/04</td>
<td>Na</td>
<td>Blue5</td>
<td>identical to blue2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07/09/04</td>
<td>Na</td>
<td>Blue6</td>
<td>identical to blue2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07/09/04</td>
<td>Na</td>
<td>Blue7</td>
<td>identical to blue2</td>
<td></td>
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<tr>
<td>14/09/04</td>
<td>A and N</td>
<td>Hard Rock</td>
<td>3 drum tracks from ‘2’ above - previous week</td>
<td>Genre/Composition</td>
<td></td>
</tr>
<tr>
<td>(N absent)</td>
<td></td>
<td>114 – Open Hat3</td>
<td></td>
<td></td>
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<tr>
<td>14/09/04</td>
<td>A and N</td>
<td>Hard Rock</td>
<td>2 bass lines added and 3 bar section of vocals</td>
<td>Genre/Composition</td>
<td></td>
</tr>
<tr>
<td>(N absent)</td>
<td></td>
<td>114 – Open Hat4</td>
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<td></td>
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<tr>
<td>14/09/04</td>
<td>A and N</td>
<td>Hard Rock</td>
<td>1 drum, 1 bass, same vocals</td>
<td>Genre/Composition</td>
<td></td>
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<tr>
<td>(N absent)</td>
<td></td>
<td>114 – Open Hat5</td>
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<tr>
<td>14/09/04</td>
<td>A and N</td>
<td>Hard Rock</td>
<td>1 drum, 1 bass, same vocals, repeated wah, wah vocal section</td>
<td>Genre/Composition</td>
<td></td>
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<td>(N absent)</td>
<td></td>
<td>114 – Open Hat6</td>
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<tr>
<td>14/09/04</td>
<td>A and N</td>
<td>Hard Rock</td>
<td>Identical</td>
<td>Genre/Composition</td>
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<tr>
<td>(N absent)</td>
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<td>114 – Open Hat6</td>
<td></td>
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<tr>
<td>14/09/04</td>
<td>C and K</td>
<td>Dino chair</td>
<td>Chair tapping and low notes</td>
<td>sound</td>
<td></td>
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<tr>
<td>14/09/04</td>
<td>C and K</td>
<td>Dino chair2</td>
<td>chairs removed. New low notes and high notes, ambient recorded sound, chomps and coda</td>
<td>sound</td>
<td></td>
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<tr>
<td>Date</td>
<td>Composer</td>
<td>Title</td>
<td>Notes</td>
<td>Session notes</td>
<td>Significant</td>
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<td>14/09/04</td>
<td>C and K</td>
<td>Dino chair2 mp3</td>
<td>mp3 mix down - identical</td>
<td>Use of 'album' info</td>
<td>Y</td>
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<tr>
<td>14/09/04</td>
<td>R</td>
<td>King1</td>
<td>Three kings with guitar</td>
<td></td>
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<tr>
<td>14/09/04</td>
<td>R</td>
<td>King2</td>
<td>Same with kick and snare</td>
<td></td>
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<tr>
<td>14/09/04</td>
<td>R</td>
<td>King3</td>
<td>Additional snare quavers speeding up</td>
<td>rhythmic variance</td>
<td>Y</td>
</tr>
<tr>
<td>14/09/04</td>
<td>R</td>
<td>King4</td>
<td>Additional guitar track in E minor</td>
<td>tonality variance</td>
<td>Y</td>
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<tr>
<td>12/10/04</td>
<td>A and N</td>
<td>Cookies Heavy Wang</td>
<td>Both boys playing at the same time</td>
<td>rhythm variance</td>
<td>Y</td>
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<tr>
<td>12/10/04</td>
<td>A and N</td>
<td>Cookies Heavy Wang1</td>
<td>Same as above with wahwah. Two drum tracks</td>
<td>rhythm variance</td>
<td>Y</td>
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<tr>
<td>12/10/04</td>
<td>A and N</td>
<td>Cookies Heavy Wang2</td>
<td>Same with bass</td>
<td>rhythm variance</td>
<td>Y</td>
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<td>12/10/04</td>
<td>C and K</td>
<td>Fairy Wonderland. cwb</td>
<td>Bundle file with no audio data - midi only</td>
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<td>12/10/04</td>
<td>C and K</td>
<td>Fairy Wonderland. cwk</td>
<td>from the same. Seven midi tracks and missing audio</td>
<td>Attempt to create mood</td>
<td>Y</td>
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<td>12/10/04</td>
<td>C and K</td>
<td>Fairy Wonderland 2.cwk</td>
<td>same; one new audio track - triangle</td>
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<td>12/10/04</td>
<td>C and K</td>
<td>Fairy Wonderland 3.cwk</td>
<td>three complete audio tracks</td>
<td>melodic and tonal freedom</td>
<td>Y</td>
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<tr>
<td>12/10/04</td>
<td>L and R</td>
<td>Fly</td>
<td>Student L singing his own melody</td>
<td></td>
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<tr>
<td>12/10/04</td>
<td>L and R</td>
<td>Fly1</td>
<td>Same only repeated</td>
<td></td>
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<tr>
<td>12/10/04</td>
<td>L and R</td>
<td>Row</td>
<td>&quot;Row your boat&quot; sung and played in different keys</td>
<td>tonality variance</td>
<td>Y</td>
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<tr>
<td>12/10/04</td>
<td>Na</td>
<td>Project</td>
<td>bass part of hot Cross buns - 1 track only</td>
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<td></td>
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<tr>
<td>12/10/04</td>
<td>Na</td>
<td>Project2</td>
<td>new bass track in F</td>
<td>F, G, A</td>
<td>Y</td>
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<tr>
<td>12/10/04</td>
<td>Na</td>
<td>Project3</td>
<td>identical - track named 'hot cross buns' new track added</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Composer</td>
<td>Title</td>
<td>Notes</td>
<td>Session notes</td>
<td>Significant Type</td>
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<td>--------------------------------------------</td>
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<tr>
<td>12/10/04</td>
<td>Na</td>
<td>Project4</td>
<td>identical</td>
<td></td>
<td></td>
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<tr>
<td>12/10/04</td>
<td>Na</td>
<td>Project5</td>
<td>identical - track two has seashore patch selected</td>
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<td>19/10/04</td>
<td>A and N</td>
<td>The Som Egeption (sic) God Card</td>
<td>identical to Dead Rock (sep 7th)</td>
<td>named after a game card</td>
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<td>19/10/04</td>
<td>A and N</td>
<td>The Big Bite</td>
<td>4 percussion tracks all of different tempos, clashing but working. Complex rhythmic patterns</td>
<td>rhythmic variance and dissonance</td>
<td>y</td>
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<tr>
<td>19/10/04</td>
<td>A and N</td>
<td>The Big Bite1</td>
<td>Development of above. 2 additional rhythm tracks (contrasting) Some dynamics added</td>
<td>Piece as a whole</td>
<td>y</td>
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<tr>
<td>19/10/04</td>
<td>C and K</td>
<td>Fairy wonderland1</td>
<td>Based on fairy wonderland above. Above version played in Cakewalk and recorded through live mic into audacity</td>
<td>complete mood change through diff medium</td>
<td></td>
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<tr>
<td>19/10/04</td>
<td>C and K</td>
<td>Shake</td>
<td>shaken instruments recorded live</td>
<td>ambient sounds, rhythmic dissonance</td>
<td></td>
</tr>
<tr>
<td>19/10/04</td>
<td>L and R</td>
<td>Bingo (was his namo)</td>
<td>This piece saved with only Audacity data files. Was R singing the B-I-N-G-O song</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19/10/04</td>
<td>L and R</td>
<td>Bingo</td>
<td>1 track drums - kick and snare</td>
<td></td>
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<tr>
<td>19/10/04</td>
<td>L and R</td>
<td>19th Oct</td>
<td>4 tracks. Drums from above plus bass (2 tracks) and melody - contrast with drums</td>
<td>1 minute long. Rhythmic and tonal variance</td>
<td>y</td>
</tr>
<tr>
<td>19/10/04</td>
<td>Na</td>
<td>Project5</td>
<td>Same as last week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Composer</td>
<td>Title</td>
<td>Notes</td>
<td>Session notes</td>
<td>Significant</td>
</tr>
<tr>
<td>------------</td>
<td>----------</td>
<td>-------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>---------------</td>
<td>-------------</td>
</tr>
<tr>
<td>19/10/04</td>
<td>Na</td>
<td>Student Na</td>
<td>built on Project5. Recorded into Audacity with piano patch. Triangle played live (out of time). Tambourine contrasting rhythm</td>
<td>Ambient sounds. Rhythmic structure</td>
<td>Y</td>
</tr>
<tr>
<td>26/10/04</td>
<td>A and N</td>
<td>Cookies</td>
<td>Recorded into Audacity with piano patch. Triangle played live (out of time). Tambourine contrasting rhythm</td>
<td>Rhythmic clashes, great use of genre and wonderful vocals</td>
<td>y</td>
</tr>
<tr>
<td>26/10/04</td>
<td>A and N</td>
<td>Smoke on the Water</td>
<td>serious attempt at 'Smoke'. Includes good riff, drums and sung guitar line and vocals</td>
<td>Rhythmic structure</td>
<td>y</td>
</tr>
<tr>
<td>26/10/04</td>
<td>C, K and Na</td>
<td>Shake</td>
<td>5 tracks with fart noise</td>
<td>rhythmic variance and whimsy of farts</td>
<td>Y</td>
</tr>
<tr>
<td>26/10/04</td>
<td>C, K and Na</td>
<td>Shake2</td>
<td>Four percussion tracks over 3 bars</td>
<td>Sound</td>
<td></td>
</tr>
<tr>
<td>26/10/04</td>
<td>K</td>
<td>Drum Crazy</td>
<td>Four percussion tracks over 3 bars</td>
<td>Sound</td>
<td></td>
</tr>
<tr>
<td>26/10/04</td>
<td>L and R</td>
<td>Rock an rop l</td>
<td>4 tracks; three drums, 1 banjo.</td>
<td>rhythmic dissonance, strong attempt at melody</td>
<td>y</td>
</tr>
<tr>
<td>9th Nov 04</td>
<td>A and N</td>
<td>Cocktail</td>
<td>Collage of heavy metal</td>
<td>every kind of dissonance - played 'smoke'</td>
<td>Genre/sound</td>
</tr>
<tr>
<td>9th Nov 04</td>
<td>A and N</td>
<td>Cocktail2</td>
<td>same with 'Dirty Deeds' added</td>
<td>Genre/sound</td>
<td></td>
</tr>
<tr>
<td>9th Nov 04</td>
<td>C, K and Na</td>
<td>Christmas1</td>
<td>use of 'Joy to the World'</td>
<td>melodic dissonance</td>
<td>melody</td>
</tr>
<tr>
<td>9th Nov 04</td>
<td>C, K and Na</td>
<td>Christmas2</td>
<td>use of 'Joy to the World'</td>
<td>melodic dissonance</td>
<td>melody</td>
</tr>
<tr>
<td>9th Nov 04</td>
<td>C, K and Na</td>
<td>Christmas3</td>
<td>use of 'Joy to the World'</td>
<td>melodic dissonance (extreme)</td>
<td>melody/sound</td>
</tr>
</tbody>
</table>
As the process of analysis continued I was able to identify significantly different approaches that the children took to their compositional activities. This was most apparent when the children started playing with the drawing tools in Cakewalk. Even earlier than this, I was made aware of the children’s interest in the visual aspects of the way their compositions were presented. These observations have been presented elsewhere (Reynolds, 2005), and are described in detail throughout this chapter. The idea that there were specifically non-musical motivations behind certain compositions led me to investigate what other things influenced the compositional approaches in this electronic environment.

In this chapter and in those that follow I present analysis and discussion about a number of the compositions that appear in the table above. It is not possible or necessary to discuss every piece, although every piece was analysed. Table 5.2 lists the 56 compositions that are presented in the current study and indicates where they appear.
<table>
<thead>
<tr>
<th>Composition</th>
<th>Composer</th>
<th>Chapter 1</th>
<th>Chapter 2</th>
<th>Chapter 3</th>
<th>Chapter 4</th>
<th>Chapter 5</th>
<th>Chapter 6</th>
<th>Chapter 7</th>
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<tr>
<td>A is mad no</td>
<td>A</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
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<td>A is mad no</td>
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<td>x</td>
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<td></td>
<td></td>
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<tr>
<td>Bad Thing</td>
<td>A</td>
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<td></td>
<td></td>
<td></td>
<td>x</td>
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<td>Dragon Sounds</td>
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<td></td>
<td></td>
<td></td>
<td>x</td>
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<td>Hard Rock – Open Hat (series)</td>
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<td>x</td>
<td></td>
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<tr>
<td>Places you will go</td>
<td>A</td>
<td>x</td>
<td>x</td>
<td></td>
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<td></td>
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<tr>
<td>DJ Music</td>
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<td>x</td>
<td>x</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Dragon1</td>
<td>A and L</td>
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<td>Big Bite</td>
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<td>x</td>
<td>x</td>
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<tr>
<td>Cocktail</td>
<td>A and N</td>
<td>x</td>
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<td>A and N</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>Smoke on the water uncut</td>
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<td>x</td>
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<td>Christmas</td>
<td>C, K and Na</td>
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<td>Dino Chair</td>
<td>C, K and Na</td>
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<td>KCN</td>
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<td>Chapter 2</td>
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<td>Rugrats</td>
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<td>x</td>
<td>x</td>
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<td>Smock on the water</td>
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<td>x</td>
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<td>19th Oct</td>
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<td>x</td>
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<td>x</td>
<td>x</td>
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<td>Bingo</td>
<td>L and R</td>
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<td></td>
<td>x</td>
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<td>Blue (2, 3, 4)</td>
<td>L and R</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>Rock and Ropll</td>
<td>L and R</td>
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<td>Who Knows?</td>
<td>L and R</td>
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<td>1st June by N</td>
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<td>Shrek</td>
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<td>x</td>
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<td>Student Na1</td>
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<td></td>
<td></td>
<td></td>
<td>x</td>
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<td>Boat hitting rock</td>
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<td></td>
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<td></td>
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<td>x</td>
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<td>King (series)</td>
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<td>x</td>
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<td>R</td>
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<td></td>
<td></td>
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</table>

Table 5.2: List of compositions that appear in the current study

It was apparent to me that two main categories existed; look and sound. It is to be expected that sound would feature given the nature of the study. Look was unexpected but emerged as a main category very early on the study when the children placed their tracks according to how they looked on the screen; the visual appearance of the composition was as important as how it sounded. The focus on the visual element
increased when the children began playing with the pencil tool and the pattern brush tool in Cakewalk; allowing them to ‘draw’ their music.

Of course, as soon as one begins looking for things it is easy to find them or to at least appear to find them. As I began my search I noticed that many of the influences crossed over each other, or were governed to a not insignificant degree by what was happening in the room at the time. This was particularly the case when the children started drawing their music but was not restricted to that.

The two approaches of Look and Sound were too broad and I became aware that other key categories existed. I attempted to note what I saw to be the most important influence in each approach and came up with the following list:

- Playing with sound
- Playing with look: shape, image, colour
- Playing with the instrument
- Playing with melody: pattern, popular or well-known tunes, easy piano pieces
- Playing with the genre: Rock, Gamelan,
- Playing with voice
- Playing with the computer and the software
- Playing with composition – ‘music’

On creating that list I felt that it would offer too many cross categories or even artificial categorisation so I reduced the typology so that it was made up of only two types:

- Playing with Look
- Playing with Sound

This list appeared to be too broad and I think that the boundaries become more blurred so I looked at ways to clarify it. This is a less than perfect solution but it is one that I believe serves this work well. Within these approaches there are at times sub sets (there are a number of melodic influences to be considered) but the six
approaches that I eventually decided upon are appropriate to my purposes. Accordingly, I now present this:

- Playing with Look
- Playing with Melody
- Playing with Genre
- Playing with Sound
- Playing with (at) Composition?
- Playing with the Computer

These compositional types are also not mutually exclusive, there is much cross over between them and different approaches frequently work within more than one style. In my analysis of the compositions I have investigated specific features of each compositional structure and identified what I believe are the key features or the most prominent features of each composition and made my choice of type based on that. I have not specifically focused on musical features including melody, harmonic structure, form and rhythmic structure; rather I have tried to include all features present in the composition. These features include shape, colour, look, thematic material, intent and source of inspiration. Melody and other musical components do feature in this typology but they are not used as the main point of analysis or of classification. The investigation and analysis of melodic and rhythmic features occurs in Chapter 6. Of course in any discussion about musical composition it is very difficult not to talk about these elements so they are also present to some degree in much of the discussion presented below. Inevitably many of the compositions mentioned in this chapter also appear in Chapter 6 where they are analysed from a different perspective.

Swanwick and Tillman (1986) look to Piaget for play theory in developing their sequence of musical development. They provide a detailed discussion of the ways musical development and child development are linked. Using Piaget’s (1951) ideas of mastery, imagination and imitation, they build a triangular representation of the “relationships between the concepts of mastery, imitation and imaginative play, and the analogous musical play elements; control of sound, expressive character and structure” (K. Swanwick & Tillman, 1986, p. 309). My proposed typology operates in
a similar but at the same time very different way. My purpose is to represent the ways children compose – at least the strategies they use, not the developmental process. Play sits at the centre of all of the compositional types but is not reliant on specific connections to types of play, rather to play itself, as a state of being. Thus the representation of the compositional process must be situated within the play context; whether they are playing with or playing at is not important.

The Typology

Playing with Look:

Much of the early work the children did was experimental, playing with the software and hardware to see what they could do. As already mentioned in Chapter 3 the children had no experience with either of the software applications and the lesson structure was very open ended with little or no instruction or expected compositional outcome. Even within this experimental framework specific approaches are clearly identifiable. The first of these approaches, and one that reoccurred throughout the study, in different manifestations, was the visual approach that I have called playing with look.

In this compositional approach the look of the composition is significantly important to the composer. The visual interface of Cakewalk affords the user opportunities to experiment with all manner of shape considerations. Designed to allow for easy identification of tracks, each track is presented in a different colour, these colour choices can be altered and there is evidence of the children deliberately altering these track colours. In addition, tracks can be moved around to create patterns. In the piano roll view the pencil tool and the pattern brush tool allow for users to input individual notes using the pencil and complex drum patterns using the pattern brush. As described in Chapters 4 and 6, and in earlier work (Reynolds, 2005), the children used these tools to draw shapes and pictures and to write words. In these compositions sound was of secondary importance to the look. In some, students indicated some desire for sound that matched the look but for the most part they didn’t actively seek solutions when sound and look didn’t match.
Look was an approach applied most often when the children worked in *Cakewalk*, although one student when working on a piece using *Audacity* commented that ‘it looked like a fish bone’. Look also appeared to offer the children a way to begin a composition without having to think musically or at least without having to engage with conventional approaches. The visual interface of both applications afforded opportunities for children to ‘time’ sections and to cue each other in and out without counting. It was through the analysis of this practice that I noticed the new and different approaches to rhythm and time that are discussed in this chapter and in Chapter 6.

One of the earliest examples of the use of Look was in Students L and A’s piece *The Places You Will Go* (Figure 5.1). This piece was very much experimental in that they were playing with the software in order to develop some skills but the creative decisions they made were based on look. Reading directly from the book of the same name (Seuss, 1990) they recorded a series of tracks in a step format purely because they liked the way it looked.

![Figure 5.1: 'Stepped' approach in *The Places You Will Go*](image)

In Student A’s piece, *Bad Thing*, look became the compositional style unintentionally (Figure 5.2). He began the piece by painting a series of ascending and descending notes, when he saw the digital representation of those notes he immediately equated the look with that of the waving lines of a heart monitor. He called out that he had created a heartbeat and the piece took shape from there.
Figure 5.2: 'Heart beat' in Bad Thing

Some of the most remarkable examples of playing with look occurred when one of the students asked if she could ‘draw a picture’ with one of the Cakewalk drawing tools. I present details of this in Chapter 6 so only present the compositions here.

Student C’s piece Little Princess (Figure 5.3) has great significance to this study as it is the first real example of a compositional approach that is significantly different from those represented elsewhere in the literature. It set the tone for a number of compositions using a similar approach and it ‘worked’ as a piece of music; certainly the children thought so. Accordingly, I present a detailed analysis of it below.
She imported a drum track (hip hop 100a) and then drew a stick figure of a little girl with a smiley face. She has not assigned any patch names or bank, just a track; Track 1. As a result the piece plays in the Grand Piano default sound. This was rather serendipitous as if she had drawn the picture in a drum track (where the tool is meant to be used) the effect would have been completely different.

The drum track is 69 bars long and plays for 2 minutes, 45 seconds. The length is not her choice. The actual picture is just under 8 bars long and lasts about 18 seconds. With the drum intro the drawn piece is about 26 seconds long. She has managed to synchronise the drums and the drawing well so there is no rhythmic clash – this too was serendipitous. The drawing is quite symmetrical so this gives the music considerable form. The use of the stick figure dress provides rhythmic consistency and a melodic basis of an ascending and descending ‘left hand’ over a steadily repeated E below middle C, whilst the little girl’s arms work against the dress pattern. The feet provide deep chord clusters, while the legs are thick, rapidly descending bass notes. The facial features, again symmetrical, enrich the ‘right hand’. All of this is
almost repeated (the symmetry is not perfect) as the piece progresses to its simple last two solo F sharp notes of the girl’s finger. Fortuitously, there is a cymbal crash at the point when feet, dress, hair and arms coincide early on. This adds to the impact and rhythmical integrity of the work. The piece has an obvious climax and although complex rhythmically, tonally and melodically sounds like a ‘real’ piece of music.

The physical height of the drawing is also serendipitous as it places the tonality of the left and right hands in a musically appropriate way. The piece starts with single Es in both hands; the repetitive dress pattern is also E. It then moves to opposing Gs (still with the E dress pattern) and moves back to the E tonality before an abrupt shift (in both hands) to F sharp. The last notes in both the left hand and the right hand are F sharp.

When playing this piece as part of conference presentations members of the audience have remarked that it has qualities of Bartok or Hindemith. I have included a section of this piece in notation form as Figure 5.4 to highlight the inappropriateness of trying to represent this work in any other way than the way in which is was written.

There were a number of pieces that took their inspiration from this piece; some of these are presented here.

Student C explored this approach over the next three weeks without as much success (either musically or personally). She experimented with different combinations of pictures but didn’t end up as happy with any as she was with Little Princess. Her most detailed drawing was Palm Tree 5, presented as Figure 5.5. I have combined all tracks together in the piano roll view in order to present the whole picture.
Her final piece using this approach was Waves finished (Figure 5.6). She has continued with the palm tree idea but in this piece has begun making creative decisions that are influenced by sound rather than look.

Student R explored the possibilities of drawing compositions over a period of five weeks. His attempts all focused around drawings of a boat hitting a rock, and what was happening around that story. He used a number of different names and components but there was a definite progression in his pieces and evidence of a lack
of satisfaction with the musical process and product when he started listening to those pieces. I present the compositional process that the pieces went through below.

Boat hitting (sic) rock (13\textsuperscript{th} July) (Figure 5.7):
Student R’s first attempt that was a drawing of a yacht about to hit a rock. The boat is ‘travelling’ in the opposite direction to the music, in that the rock is played first and the flag indicates that the boat is moving from right to left; the timeline of the software (and the cursor) travel from left to right. It was drawn into an audio track so it doesn’t play. Because of this he could not have heard what he was drawing.

![Figure 5.7: 1st Boat composition](image)

Boat hitting (sic) rock (13\textsuperscript{th} July) (Figure 5.8):
He has placed the data into a midi track so that it plays now. He has also added ‘waves’ – although they are a long way below the boat (both in actual sound and graphically). He has drawn a couple of fish swimming below the boat (not to scale). The boat and the rock are the same. No patch or bank selected. Musically, it is very complex, because of where he has drawn it, it all sounds in the bass end. The first chord is two F sharps, two octaves apart – not intentionally. It ends on a single F two octaves below middle C.
Titanic (20th July) (Figure 5.9):
The theme is the same but this time the boat picture is of the ‘Titanic’ about to hit an iceberg. It is quite a detailed picture, all on one track, with the water, ship and iceberg (this time the boat is travelling in the same direction as the music). He hasn’t assigned any track properties; just drawn the picture. The ship itself, because of its shape and features works well musically. The hull, the deck and the top deck are played by a series of regular crotchet notes; E below middle C, middle C and E above middle C respectively. This provides a regular open rhythmic chord. The portholes, spaced regularly along the ship are F Sharp below C and A below C. The very top deck (or rigging) is made up of ascending crotchets; two F Sharps, three Gs, a long string of G sharps and back down again. Of course none of this was musically intentional but the sound is ‘acceptable’. This piece was drawn deliberately but the musical result wasn’t understood at the time of drawing.

The musical effect is quite interesting with a pedal E that sits under a set of rising chords based around E7 – E9, Eminor7 and E7. Of course the musicality was not the intention of the piece and any chordal appropriateness was coincidental but that doesn’t change the fact that that appropriateness does actually exist.
Dolphin (20th July) (Figure 5.10 and Figure 5.11):
This is an obvious continuation of Titanic, even though it has a different name. Student R has added two new midi tracks and an audio track. The audio consists of him making whooshing noises into the microphone, in the background there is some laughter at his efforts. Both midi tracks contain pictures of dolphins. The first dolphin elicited the comment ‘my dolphin sounds like a shark’. This was due to the fact that he had drawn it using low notes. Its range is between G below middle C and low B flat. I explained to him that where he draws affects the sound, so his second dolphin is placed high on the stave. No patches are allocated for the boat or the second dolphin, the first dolphin uses the ‘whistle’ patch. Student R’s comments about the sound of his dolphin are significant. Here is evidence that despite the fact that he has been working with look as his main influence, he has started making considerations about sound. It is clear that his expectations of sound were not met by his drawing efforts. I have presented two views of this composition in order to aid understanding. Figure 5.10 is taken from the Track View in Cakewalk and shows the piece as a whole (including the audio file at the bottom of the picture). Figure 5.11 is a combined Piano Roll view that shows where the two dolphins fit in relation (pitch wise) to the boat.
Titanic4 (27th July) (Figure 5.12 and Figure 5.13):

In one of his Titanic versions, Student R had removed his dolphins. In this version he has pasted his dolphin back into the piece and has retained the same patch (alto sax) and high pitch. He has added waves (drawings) and changed the colour of the boat track to red. He has used Bottle Blow (muted track) and Rain for the two ‘waves’
tracks respectively, despite indicating that he wasn’t happy about the bottle blow sound for ‘waves’. The tempo is now set at 200bpm. Previous versions were set at 100bpm but he had set playback at double speed.

In the Track View his ‘wave’ tracks do not look very wavelike but they look more so in the piano roll view. The change of track colour was important to him and strengthens the influence of appearance as a motivating factor in this composition.

Again, I have presented two different views for this piece. Figure 5.12 is the Track View and Figure 5.13, the combined Piano Roll view.
Dolpen3 (sic) and Titanic Finished (3rd August):

In what appeared to be the last two pieces of this series (given that the name of the last one is *Titanic Finished*) Student R experimented with the placement of the dolphin and with redrawing it in an attempt to find a sound that suited it. At my suggestion he removed the bottom section of the dolphin drawing (see Figure 5.14) so that only the top of it was visible. He then played with where the picture was placed on the Piano Roll. In *Dolphen3* (the second last attempt) he has drawn it starting on the note E5 rather than on C7. He has changed the patch from Alto Sax to Tango Accordion. His original dolphin was on Track 5, this one is on Track 6. In *Titanic Finished* he has changed the accordion patch of the dolphin track to gun shot, indicating that he was still trying to improve the ‘sound’ of the dolphin. He has used the tempo ratio button to double the play back speed of this piece compared to *Dolphen3*. 
Titanic (10th August):
Student R made a final attempt at completing this series with this piece. He has reverted to his original dolphin drawing (indicating that he was able to find an old file and copy directly from that). This final version is based on previous versions but has a definite ending. The boat is the same, one of the original ‘waves’ tracks (Track 4) has been removed, the other has been unmuted (Track 3). The half dolphin has been removed and replaced by his original dolphin. He commented that he had found the correct sound for this dolphin and used a sweep pad (GM95). He made mention of it sounding like a whale sound. The effect of using this patch (even though it is very quiet) is much stronger musically and it actually works as a dolphin sound. As a rhythm track he has played in nearly 23 bars of beats. He used acoustic snare, electric snare, low floor and high floor tom sounds produced by using the D, E, F and G keys. The beat is a fairly consistent crotchet beat that almost aligns to the opening section of the boat picture. He concludes the piece with a five note chord crash (toms and crash cymbal).

In a postscript to these compositions, Student R spoke about what he did during his final interview with me at the end of the current study. In that interview he mentioned that when he changed the pitch of the dolphin because it sounded too deep it was because the dolphin was out of the water. The following transcription from that interview presents his ideas in context:

I: You had trouble with the dolphin
R: Yeah, that was annoying. Like I couldn’t get the dolphin sounding right for the …
I: That’s right; didn’t you say something like it sounding like a shark?
R (uncertain): Yeah.
(More certain now)
R: Because it was too deep so we made it higher.
(Thinks)
[7.27]
R: Yeah, we made it higher because it was jumping out of the water; I think

This presents an interesting connection between image and sound. He seems to be saying that there needed to be a reason (visual) for the dolphin to be made higher. It had to be higher so that it sounded better but putting it higher in the picture spoilt the look (or the pictorial representation of the scene). In coming up with the idea of the dolphin jumping out of the water the look and the sound are reconciled.

In presenting such a detailed analysis of one series of compositions, I have attempted to show the complex nature of the editing process and the many and varied influences that were present in the children’s compositions.

Following on from Student C’s discovery of drawing, Student L produced two remarkable pieces that were only about look. He didn’t spend long on these pieces and once finished he moved on to work on his Rugrats sequence. The two compositions; $X_1$ and $X_2$ are presented below:

$X_1$ and $X_2$ (27th July):
This piece is really only the very beginning of the compositional idea. Student L worked quietly on these two pieces and I missed the creative process and was not able to ask him specifically about the pieces. It appears that he had the overall idea and then proceeded to draw it in. The two compositions together create a visual (and coincidently, musical) representation of a computer arcade style game. $X_1$ is Nine and a half bars of crotchets playing D and D Flat together. Half way through bar 6 there are three crotchet off beats of B and B Flat played together, over the D and D Flat. He has paid no attention to where ‘one’ is as he has drawn the notes starting in the second bar after a dotted quaver rest.
X2 (Figure 5.15) is the continuation of the X1. He has added a second track (no patch identified) of drawings of a sequence from a space invaders game; a tank shooting from the ground, clusters of bullets, a space invader with bullets approaching it, the destroyed invader. The sequence occurs horizontally along the timeline created by musical bars. It is drawn in the piano roll view. When both tracks are viewed together the cluster of bullets align and the space invader ‘stands’ on the platform created by the repeated crotchets in Track one. In Figure 5.15 the blue sections are the note clusters, the green sections are the ‘space invader’ drawings.

Figure 5.15: Combined view of X2

This composition is a remarkable example of the use of drawing in the compositional process. The linking between tracks, especially where the B/B Flat clusters in Track 1 match the 32 note clusters in Track 2, works remarkably well and the effect of this aspect is very much one of a ‘laser shot’ firing in a game. The horizontal ‘bar’ of clashing D/D Flat chords provides an unsettling yet rhythmic drive to the piece that is entirely appropriate to the subject matter.

Student A devoted less time to ‘drawing’ his compositions than any of the other children. He enjoyed the idea and played with it over a couple of weeks but was the first to abandon it as an approach. His first attempt was a piece he named A is mad no. The layering is thick and he has created a series of complex chords that move in and
out of dissonance in his original track. He has then overlaid that track with more of the same producing a cacophony of sound that pulses with its regular beat. The title represents the madness of the piece – although he knows he’s not mad. It is also a response to my comments after hearing the piece; I tell him to save it, he asks me what to call it so I say to call it, “A is mad”. He liked the idea.

The piece is directly inspired by Student C ‘smiley face’ piece. Interestingly, this piece is not a ‘picture’; it uses the pattern brush to create linear blocks of sound across multiple tracks and sounds. He was very impressed by the result and thought it was ‘awesome’. With its choice of sounds and repetitive rhythms it is reminiscent of ‘O Superman (for Massenet)’ by Laurie Anderson (Anderson, 1981).

He continued with this piece in a series of five works. There was a vacation break between the composition of the first two and the last three pieces. After the vacation Student A replaced everything in his first attempts and replaced them with a piece that consisted of the word ‘Freddy’ drawn onto the piano roll and a picture of a stick figure (Figure 5.16).

![Figure 5.16: A is mad no 4](image)

This approach to composition proved to be somewhat unsatisfactory to Student A and after this attempt he abandoned it.
Playing with Melody:

The use of specific melody in the compositions was limited in that there were very few examples where the composition of a ‘tune’ was the most important aspect. Melody, however, did guide a number of compositions in that it was its use that was the most significant influence. There is much cross over between the use of melody and the use of genre (since most genre pieces required some use of melody) but there is enough difference to allow for meaningful categorisation to take place. I have included compositions that used popular or well-known tunes and remembered easy piano pieces in the section on melody but have created sub-categories for them. I have taken the same approach for the use of voice in this (and in other categories). One use of melody and perhaps the only example of an original, melodic piece was Student N’s sung melody in the piece Yellow. This will be discussed in the sub-section, Playing with Voice.

Easy Pieces

None of the participants had anything more than very rudimentary formal music training but there is a repertoire of simple pieces that appeared in compositions throughout the study. Hot Cross Buns features in a number of compositions. In Student Na’s piece Project5 (12th - 19th Oct, the last in a series of Project compositions) she used the bass part of Hot Cross Buns and even named the track on which it was recorded, Hot Cross Buns. Her playing is not accurate and she doesn’t start on one (as shown in Figure 5.17) but she used this version through all of this series and she used in her piece, Student Na (19th Oct), in which she recorded it into Audacity and added triangle and sleigh bells that she played live.
Hot Cross Buns also features in Student N’s piece, *1st June by N*. In this piece he plays the first three notes (F, E, D instead of E, D, C) eleven times before moving to the ‘one a penny’ section, which he doesn’t complete. Over the top of that melody (the track is somewhat curiously named 123abc; the Hot Cross Buns track is named three-o-three) he plays an off the beat repetitive pattern around the note E.

In Student C’s *Pink* series she uses what sounds like a tune from a beginner’s piano book. She uses this simple tune (Figure 5.18) in the first four versions of the series but deletes in the fifth. The series demonstrates a sequence of compositional choices and a strong reliance on melody. I provide a more detailed analysis of this work from the perspective of its melodic and rhythmic dissonance in Chapter 6.

In Students C, K and Na’s piece Christmas they used the opening line from the Christmas Carol, *Joy to the World*. The playing that was evident in this piece was not so much the playing with that particular melody, although there is evidence of that; more importantly the use of that tune eventuated from Student K playing around with
a descending C major scale. As she played, she seemed to remember that she had learnt this tune and it was immediately included. There is a detailed discussion of the use of this piece in Chapter 6.

**Popular or well-known tunes**

There were two significant uses of well-known tunes that are worth detailing and that represent a major approach to composition in this study. One of them best belongs in the ‘Playing with Genre’ category but should be mentioned here, in particular certain features of its use.

The *Deep Purple* song, *Smoke on the Water*, was a frequent visitor to the compositions of some of the boys in the study. Its first appearance was early on in the study, in the fifth week, in a piece entitled *DJ Music* by Students A and L. Both boys had recorded approximations of the main riff. Student L used it again in Week 8 with his piece *Smock (sic) on The Water*.

In this piece he has created six tracks but they are all duplicates of Track one. It is deliberately structured with a 4 bar opening using Track 1 only then joined for another four bars by Track 2. The other tracks come in after bar 8. He is rhythmically quite accurate but has used the wrong starting note for the phrase so ends up ‘wrong’. Instead of using G, B flat, C, G, B flat, D flat, C, G, B flat, C, B flat, G (Figure 5.19). He has started on F and his first interval is a fourth (instead of a minor third): F, B flat, B, F, B flat, B, B flat, F, B flat, B, B flat, F (Figure 5.20). He was happy with this though. At bar 13 all parts jump an octave. He finishes the piece with a two bar blues descending ending using a dotted rhythm. He doesn’t quite get this ‘right’ either; starting on A and using all white notes down to A with a final leap to a high D (instead of an octave).

![Figure 5.19: Original Smoke on the Water riff](image-url)
He has not taken any notice of where ‘1’ is so starts the piece on the 2nd beat of the bar. This makes no difference to the sound of the piece.

The second significant use of a well-known piece was Student L’s use of the theme music from the Nickelodeon children’s cartoon series *Rugrats*. L’s use of this theme is interesting on a number of levels. Even though he didn’t actually play it properly, the other participants recognised it and praised him for doing it correctly. His choice of using the theme came directly from his experimentation with synthesiser sounds; he happened upon a sound that reminded him of the theme and then decided that he could play it. He came very close in his approximation. This piece is discussed in more detail in Chapters 4 and 6.

In Week Eleven, Student R made a clear attempt at melodic and harmonic form in his piece *Turtle 10*. This work, built up over three weeks incorporates an attempt at the *Ode to Joy* theme as well as a melodic line that is structured and deliberate.
Playing with Voice

The ability to record their own voices and to record the voices of those around them appealed to the children, and voice featured strongly in compositions from the first week when Student C recorded me in conversation with her in the piece *Conversation* but the focus of that composition was the computer rather than the voice. The following week the three girls recorded themselves in a role play of a telephone conversation and some fake school announcements in their series of *KCN* pieces. It is difficult to categorise this series as voice based play, sound based play or computer based play. As mentioned in earlier in this chapter, Students L and A read from the storybook, *Oh The Places You’ll Go* (Seuss, 1990), in their piece of the same name. Although Look featured strongly in this piece, with the individual voice tracks arranged in steps, the piece itself was about the boys recording their own voices. These three examples demonstrate the difficulty in trying to categorise the compositional process, they also show how the children worked across different types at the same time.

The use of voice as a component of melody is very apparent in Students N and A’s *Yellow*. This too has been mentioned earlier but it is worth noting that it was the key element of this piece; it was what started the piece and what the piece was built around. The piece itself is very short (15 seconds) and is made up of four tracks:

Yellow: Student N just repeating the word ‘yellow’ in a rhythmic fashion
Whistle: Student A whistling what sounds to be a deliberate attempt at an original tune
Marshmallow: Student N sing/saying; ‘Yellow car, yellow coral and a yellow marshmallow’ (Figure 5.21)

A is recording this: Two very brief whistled notes
This is an interesting piece that demonstrates collaboration between the two boys and an appropriate use of the software. It is gentle and somewhat whimsical; significantly different from their rock genre pieces.

Students R and L used voice as the basis for their pieces Blue (2, 3, 4) and Bear1. Also in the piece, Who Knows, based on What Shall We Do with the Drunken Sailor? The Blue pieces were built around a short rhyme around the word ‘blue’. It was supported with clapping and some piano chords. Bear1 featured the boys singing the first line of the Disney song Bear Necessities from the film, Jungle Book (also an example of Playing with Melody: Well-known tune). They also used their own version of Row, Row, Row your Boat in their piece Row. I discuss this piece in terms of its rhythmic and melodic dissonance in Chapter 6.

In another use of the Smoke on the Water riff Students A and L played the riff starting on E but with the correct intervals and a very close approximation of the rhythm in their piece, Smoke on the Water Uncut. I include it in this section about playing with voice because of the vocal track recorded by Student N. In this track he ‘plays’ the guitar part and sings the verse. Student N had already used voice in the production of his remarkable and sustained guitar solo in their piece Dead Rock, which I discuss in more detail in Chapter 6. In Smoke on the Water Uncut Student N provides a driving, distorted guitar vocalisation that precedes two sung lines with lyrics that are both borrowed and made up. Figure 5.22 presents a transcription with words of this track. I have used ‘doo doo’ as the guitar line. The melody was much less regimented and rhythmically accurate than the way I have presented it.
It is interesting to note that Student N is singing in the key of F Major while the riff is being played in E minor.

**Playing with Genre**

I have introduced the use of *Smoke on the Water* earlier in this chapter. The boys were fascinated by this piece and inspired by it. They wanted to reproduce it and its Heavy Metal style. The use of *Cakewalk* drum styles assisted the boys in this endeavour by presenting them drum tracks entitled ‘Heavy Metal’ and ‘Hard Rock’. I have mentioned the particular pieces already in this chapter so don’t need to include them again here but it is important to make mention of this significant influence in the compositions and compositional processes of the boys.

An interesting example of genre composition was the use of Japanese instruments in a piece by Student A, *Dragon Sounds*. This piece was inspired by Vietnamese water puppets that I had brought in to encourage composition, the choice of Asian style instrumentation is appropriate and demonstrates a level of musical and cultural awareness that is surprising and not repeated.
Student C’s Vietnamese water puppet inspired piece, 8th June, also had an Asian influenced sound. In her case it is reminiscent of a Gamelan style. The following transcription details our conversation about the piece after she had finished it:

I: You must know something, what was it about?
C: I just listened to some of the music things and got some that just sounded a bit like the, um, dragon.
I: Okay

I tell her that it sounds very much like Balinese music and ask her if she has ever heard any. She is very excited and nods her head [16.40]

C: Yeah I go to Bali

**This is very significant. C has experience in Bali and is familiar with Balinese music. She has connected the Vietnamese dragon with her knowledge of Bali and produced a piece with specific Balinese reference. This is only made possible through the use of the technology**

I: Does it remind you of that?
C: Yeah
I: Did you know that when you were writing it? [16.48]
C: Yeah. In some of the parts, yeah
I: It really has that Gamelan sound
She agrees
I: I wonder if you could make a tune that goes across the top of it

I talk about a melody that is completely different and that maybe goes up and down over the top of it. I notice she hasn’t saved it. [17.13]

I: Have you changed it today?
C: I’ve just changed the name of it
I: That’s okay. And that was called 8th of June? Did you make any others? No? Just that one? Okay, that’s great, that’s a complete track isn’t it? (She nods). So
if you wanted to you could put in a separate melody because all of that is very rhythmic isn’t it?

I: Now that was from the dragon. Did the dragon being an Asian dragon make you think of Asian music?
C: Yeah, I don’t know, yeah kind of (she is thinking back) just being like … (she makes up her mind) Yeah [17.52] (She smiles – obviously pleased with herself).

I: Okay. Very interesting, a Gamelan piece.
(15\textsuperscript{th} June)

I revisited this piece with Student C in a final interview I had with her. Her recollection of what she was trying to achieve with this piece is somewhat different but at the same time supportive of the notion of writing to genre. In the final interview she talks about her experience observing (what I think is) Chinese New Year celebrations:

I: Was there any activity you liked the best? Like, did you write a story?
C: Um. I’m not sure
I: Remember I brought those puppets

[12.24]
C: I don’t think it was a story I think it was that dragon, I just made it like a music like you know how, I don’t know if it is Chinese or something, but you know how they go under those things and they go all weird and like that? I just did kind of music to go with that, I didn’t write the story

I: Oh okay like the dragon that marches down Bourke St or something?
C: Yeah
(1\textsuperscript{st} Dec)

It could be seen that this conversation is contradictory of the earlier one but I don’t think so. This is the recollection of a 12 year old child; it represents her reality and is
her narrative. Whether she was inspired by her Balinese experiences or by Chinese dragons is immaterial; she was influenced by an Asian experience and wrote a piece of music that reflects that.

The series of *Blue* pieces by Students R and L is documented in Chapter 4 in a discussion about how the children counted their pieces in. I discuss it here as an example of the use of genre in the compositional process. The piece is entirely melodically driven so might well be presented as an example of playing with melody. By presenting it under the genre heading, I reinforce my point that these approaches are not mutually exclusive. In the following transcription the boys have just finished recording vocals for the piece and now decide that they need some drums.

They listen to it
[21.06]
L: Now we need a drum beat to go with it. Now we need a (indistinguishable) for it … a beat for it

They start vocalising drum beat sounds and jiggling in their seats

R: How do we get drums?
I: Stop, stop. What I’ll do now
R: How do we get drums into blue?
I: Let’s think about where do you get the drums?
L: In … I know. Go to file

R isn’t listening

I: Listen to what he is saying. Go to file
L: Listen to me. Go file, open, shared … *Cakewalk*, drum style?
I: Drum styles. No think about what sort of drums do you want?
[22.51]
L: A rappy one
I: What sort?
L makes a cymbal, bass sound; it is easy to hear what style he wants

I: A hip hop one

They look for some

I: ‘Open 16ths’ (reading file titles)
L: Oh, that’ll be like (he sings a very fast riff – does he actually know what a 16th is?)
R: ‘Triple feel’

I sing the rhythm for them

R: ‘Double time’

I do the same

L: Yeah do that
R: ‘Hard Rock’!
L: Yeah
I: That’s not a rap feel
L: Doesn’t matter
I: Open it and see how it sounds

They play the track and groove along to it

I: Okay, is that what you want?
[23.43]
L: Yeah

My transcription notes reveal my thoughts about what was happening:
The last minute of interaction is very telling. The boys have a clear idea of what they want the drums to sound like and they are using me to get it right. They don’t want me to choose for them, rather they just want me to interpret
the sounds and help them technically. When they find a sound that they think they will like more (Hard Rock) they go with that. At all times they had an idea of what the next stage in their composition would be (24th August)

The final version, which included a clapping track (this is also discussed in Chapter 4) and some piano chords, was mixed down and added to the boys’ ‘album’. The boys were very happy with this piece. As the piece developed I typified it differently, ending up placing it into the melody/composition area. But at this point the most important aspect was genre.

Playing with Sound

While this type of compositional strategy might seem somewhat obvious, the examples above demonstrate that frequently sound was not the main approach. The importance of sound was raised by a number of participants during their final interviews in their discussion with me about their own perceptions or understandings of their compositional processes. As detailed in Chapter 4, Student C talks about choosing a topic and then finding the right sounds. Student A mentions trying to make things sound alright, Student R says he wanted music that sounds good. It is my belief that while they did approach their music with the intention of sounding good, they approached that goal in different ways and through different affordances of the environment. Despite having a notion of sounding good, sound was not the main approach. The examples I provide below are instances of where students have deliberately worked with sound as an element, not a result, in the creation of their pieces.

Student K was perhaps the most frequent user of sound as an approach. Very early on in the study (Week Three) she used pre-recorded audio files to create a richly layered piece made up of pre-recorded wave files that I had prepared for them (Figure 5.23). She liked the way the pieces aligned visually but she was most interested in how they sounded together.
Student K displayed interest in working with ambient sound. Recordings of the music that was played as children prepared to go into classes (played over the public address system) were used in at least two of her pieces. Her piece 30ofmK (30th March) is an extension of K1 above. In it she has included two separate recordings of *Johnny B Goode* that was the ‘play in’ music that morning.

In her piece, K, (25th May) she arranged six tracks that played one after the other over 30 bars. Each track is named and has a patch assigned:

- Happy – Music Box
- Sad – Cello (played very deep)
- Bored – Tubular bells (a repeated two note phrase – B two below middle C, A)
- Rain Forest – Choir Aah (played in bass clef)
- Puffed – Breath noise (Repeated crotchet A – bottom space of bass stave)
- The Beach – seashore

Of interest in this piece is her use of dynamics. Many tracks are very quiet. It is obvious that she has played some of them very gently. In the tubular bells track every
second note is barely audible, the same applies to Puffed. She appears to be experimenting with texture and sound here. Quite complex work and given the amount of time she spent on it (28 minutes), some real thinking going on. There are some interesting melodic features to this piece where Student K works mostly with the black notes in all but two tracks (Puffed and Sad). In these two tracks she has worked strongly around F natural rather than F Sharp.

In what was a remarkable engagement with sound and the use of the computer to capture it, Student K’s two *untitled* pieces are her attempt to explore the ideas behind John Cage’s *4 minutes 33 seconds*. I had introduced the concept of this piece while trying to explain what a piece of music could be; here again is the idea that the children didn’t fully understand the concept of composition. This occurred during the session that I ran specifically for girls only on 17th August. The following transcription presents how it was introduced and the conversation that happened.

I: Did I tell you guys? C and Na? Did I tell you guys about a piece of music called 4 minutes and 33 seconds? It’s a piece of music written in the 1950s by a guy named John Cage. What you do is you go to the piano, lift up the lid and you sit down, and you do nothing for 4’ 33’’.

[34.02]
C: That’s a piece of music?
I: That’s a piece of music

I: Now somebody performed it
C: Oh my God
[34.41]
C: Can I just save this and just do … can I?
I: You can’t do … I’m not going to let you compose a piece called 4’33”
K: Oh (disappointed) I’ve already started though [34.50]
I laugh
I: Somebody performed it last year the International festival
K: That’d be hard to play
As indicated earlier, Student K had already used ambient sound in her pieces. As soon as I mentioned the idea of 4’.33” she started recording her own ‘silent’ piece. Unfortunately, she experienced a computer crash and she lost her first piece, which she had recorded in Cakewalk. She managed to create two more, however, both untitled; one in Cakewalk and one in Audacity. In my initial analysis of the pieces for that week, I assumed that she had made a mistake and had recorded nothing. These pieces were, however, her attempts at music in which what was happening in the background become the piece itself. Her Cakewalk piece contained no data at all since she did not attach a microphone and attempted to record into a midi track. Her Audacity piece consists of 1 minute and 27 seconds of sounds from the classroom. It is a recording of me discussing a piece with Student C. The following edited transcriptions present Student K’s process of composition:

[35.33]
K: My 4 minutes thing didn’t um … my 4 minute thing wasn’t a 4 minute thing it was only about 1 minute thing
C: Okay, are you ready?
I: Oh so you recorded nothing did you?
K: Yeah
C: Ready?
I: But you’ve already got one here
C: Ready?
I: Yeah
K: Oh yeah

[38.56]
K has started to record something:
I: What are you doing?
She laughs
I: Oh, please
For some stupid reason I don’t want her to record ‘nothing’. I have no idea why I am doing this – probably just worried about the quality of the data – because what she is doing is completely valid.
I: But you can hear all the stuff in the background
   Which is exactly what the point of the original piece is
   C starts making some strange noises so she is recorded. They laugh.
   She then plays some notes on her keyboard
[39.14]
K: Yay, it recorded
   She is very excited about what she is doing
C: Listen to it
   I start one of C’s pieces playing
[39.26]
C: Oh not this
   K laughs – she is recording this as well
C: Oh my God
   K laughs quietly

It is quite clear that Student K is having a lot of fun and that she is actively involved in the recording of a piece that despite not having any musical content of her own is very much a valid composition.

As I have said, the importance of this process escaped me in my initial analysis and I dismissed these pieces as either mistakes or something else. It was not until I revisited the analysis that I appreciated the importance. I managed to interview Student K later on during the study in order to discover more about what she intended with these compositions. Transcriptions from that very informal interview follow:

I: You made a piece of music that didn’t have any sound in it
K: Yep
I: First of all, do you know why you did that?
K: Well I wanted to see what it would do and if it would like make … anything
I: Anything? And you just pressed record? And you weren’t using microphones or anything were you?
K: Nuh
I: How long did you make it? I stopped you didn’t I?
K: Yep. I think it was about 2 minutes or something
I: And you were using Cakewalk weren’t you?
K: I think I was using Audacity
I: Did you play it when you had finished?
K: Yeah
I: And what did it sound like?
[1.02]
K: Nothing
I (laughs): Is that what you wanted it to sound like?
K: Sort of
I: Was it a successful piece of music?
K: Um … yeah
I: It was? Do you know if you've still got it?
K: No. I remember sort of but I think the computer shut down on me after I’d …
I: And it disappeared
K: Yeah
I: Because I think you were trying to make one in Cakewalk and then nothing happened did it?
K: Yeah
I: So then you made it in Audacity.

I: It doesn’t matter. The fact is that you made one. When I was listening to me telling you at the time and then I said ‘No, you can’t do that’, it was something that interested you at the time
K: Mmm
I: And you thought it was fun didn’t you? Because … any reason?
K: No not really
I: Just something you could do?
I: the idea that perhaps a piece of music with nothing in it was as good as a piece of music with something in it?
K: Yeah [4.22] It was just different
In this transcription Student K articulates (despite some leading questions by me) that this was something different, something she wanted to do and something that was a valid musical composition.

In the same session Student C also expressed interest in using the same compositional process but didn’t follow through with the idea.

**Playing with (at) composition**

This classification might seem redundant in that every piece that was written was in a sense an example of the child playing with or at composing. I have included it as its own type because during analysis I noticed that there were instances were the compositional process became the most important thing. It also became apparent that at times the children engaged in a compositional process that whilst not being ‘art for art’s sake’ was focused on the writing of a piece of music. So while not quite being ‘composition for composition’s sake’ these pieces, in my analysis, look to be pieces where the focus was on actually composing something. Once this focus is accepted it is fairly easy to see, within the context of this study, that the children used compositional strategies that fitted with their limited and developing understanding of what composition was and what it was supposed to be. As with all of the compositional types, the works could be included in any one of my categories and each contains examples of other approaches.

One manifestation of playing with composition was the use of patterns. One student in particular (Student Na) used what appeared to be melodic patterns in a number of pieces. There was no melody as such but in analysis it became clear to me that these were representations of melodic lines. This student also attempted to ‘play’ the piano using both hands, often in contrary motion. She could not really play the piano but she knew what the actions looked like and reproduced them. This student was particularly shy and her responses to any questions were very limited, usually relying on one-word answers or ‘I don’t know’.

An example of a series of works that fit into this category is the *Turtle* series by Student R. The turtle in question was a Vietnamese water puppet that I had brought in
as a stimulus. This compositional series lasted over a period of four weeks and were the only things that Student R produced in that time. He saved a total of thirteen versions of the piece. I have not presented the whole sequence here but rather I have selected representative examples.

In the following analysis and discussion (and in others) I use the term ‘pianistic’ (a style frequently adopted by Student Na) to describe the imitative approach children took to some of their piano playing. It was as if they were copying a piano player; sitting upright and making exaggerated gestures while playing with two hands (frequently) in contrary motion.

Turtle1 (25th May):
This appears to be made up of somewhat random, pianistic doodling.

Turtle (1, 2 and 3) (1st June):
First in a series of 4 saved ‘Turtle’ pieces for this week. Track 6 is still armed and all others are muted; indicating that this is the track he last worked on. Another example of playing each track independently – mute the previous tracks so that they cannot be heard while recording the next track. This indicates that each track is seen separately. Also it means that musical synchronization is not possible (whether or not that was even a consideration). He has used the following patch selections:

- Track 1 – blank audio
- Track 2 – no patch selected
- Track 3 – piccolo
- Track 4 – tuba
- Track 5 – steel drum
- Track 6 – reed organ

He used two melodic and rhythmic themes throughout this piece. The first uses a repeated quaver rhythm. This occurs in Tracks 1, 2, 3 and 4. The second is a melodic theme based on a triplet feel (so in 6/8 it would appear as crotchet quaver, crotchet quaver, dotted crotchet, dotted crotchet – ascending, descending repeated note). In Track 6 this melody starts on G, moves to C then F (first note of the F sequence is A) It sounds like an elementary piano piece. This is not played consistently and R forgets
how it goes. He returns to the ‘correct’ theme but this time using D, E and F. The theme occurs in Tracks 3, 5 and 6. In Track five it is less of a triplet rhythm and uses A, B and C repeated. In Track 3 it is a triplet rhythm but only uses G, A and B ascending and descending. The melodic themes are presented below as Figure 5.24 and Figure 5.25. I have represented them using a quaver resolution to make melodic clarity easier to see. This, of course means that the rhythmic nuances are removed. My point in presenting these figures is to show the importance of the melody to the composition. I have left out the exaggerated pianistic chords and have transposed the melody down two octaves in order for it to be readable.

Figure 5.24: Representation of 1st section of melody in *Turtle*

Figure 5.25: Representation of 2nd section of melody in *Turtle*
It is clear to see in these representations of melody the melodic line that Student R has used and how he has stepped the melody as it progresses. The ‘mistakes’ are also clear in bars six and seven (taking both figures a representation of one work). It is interesting that he copied the first track, complete with mistakes into another track.

In the subsequent version of this piece the two offending bars have been removed, in the next version these two bars have been filled by sliding the correct notes into the correct position. In the next version he removed all but two tracks and focused more on the melody.

Turtle 4 (8th June):
He has added Track 7 (Reed Organ) and played in a melody that is very reminiscent of Beethoven’s ‘Ode to Joy’ theme. He has not got it right but the attempt is clear and he finishes the melody quite deliberately and with emphasis. He had the other tracks muted and Track 7 armed so he was playing this track with no reference to the others. This track commences on the second bar. The video of this session shows Student R trying to play what sounds like the Beethoven to Student N. He can’t get it right and N asks him if it is ‘Mary had a little lamb’. R says it is not and then tries to play ‘Mary’. He then says that he has to get it right and puts on the headphones and starts working on the theme. His attempt at the Beethoven theme is presented as Figure 5.26.

![Figure 5.26: Student R's attempt at Beethoven](image-url)
In the subsequent versions that Student R created during this session he aligned the tracks so that they all started together and added a new track that appears as a ‘theme and variation’ approach to the Beethoven theme (Figure 5.27).

![Figure 5.27: R's variation on Beethoven](image)

He then went on to add two more tracks. The first was a series of chords played to fit rhythmically with the Beethoven theme. The second was a drum track consisting of chord clusters of four ‘note’ chords made up of four tom toms and a single splash cymbal in a repeating 1 + 2 + pattern; the drums on the beat, the cymbal off the beat. This continues throughout with some minor variation for 10 and a half bars. It finishes with a loud cymbal crash.

The final two works in this series demonstrate a real attempt by Student R to finalise a piece that actually sounds appropriate. In my discussion with him he indicated that this was his aim.

Turtle 9 (15th June)
He has added two new tracks but he didn’t assign any patches. The first consists of long held four note chord clusters underneath a repeated melodic phrase that is reminiscent of the melody in Track 6. The chords consist of A, B, C and D below middle C, and the melody starts on G above middle C and moves through A to B and back again in a dotted quaver (G), semi quaver (A), crotchet (B), crotchet (A) [repeated 3 times] then three crotchet Gs. This four bar phrase is approximated throughout. He moves the tonality around so that he starts on E or F sharp or C. It is just under 16 bars in length. The second new track is very similar but the melody moves around more, as do the chord clusters.
He spent a long time on these pieces but in the end felt they were ‘too jumbled’. He has tried to develop melodic ideas but the end result is, as he says, ‘jumbled’. His use of tracks, with names and description of content is provided below:

- Track 5 – steel drum: Random clusters of notes
- Track 6 – Reed organ: Melodic theme
- Track 7 – Reed Organ: Beethoven
- Track 8 – Brass section: Beethoven variations
- Track 9 – French Horn: Chords based around Beethoven – they follow the melodic pattern
- Track 10 – drums: Toms and Cymbals
- Track 11 and 12 – undefined (Reed organ): Note clusters and variations on Track 6 melodic theme

In Figure 5.28 I present the Track View of the two new tracks to demonstrate the chordal and melodic lines used.

![Figure 5.28: Chordal and melodic structure in Turtle9 in Track View](image)

These two tracks are of interest in their harmonic structure in that the second (Track 12) is very similar to the first but is consistently played at a tone lower and about a beat later than Track 11. In Figure 5.29 I show the opening sequences of both tracks to highlight this rhythmic and harmonic clash.
Turtle 10 (15th June):

In this, the final version in the series, Student R has produced something that is quite different from the previous versions. He has cleaned it up a lot by getting rid of the last two tracks and the other two tracks that worked in chord clusters. He has kept the Beethoven theme and its variations and what was Track 6. He has attempted to add a harmonic structure by using two series of rising chords. The first takes 8 bars to reach its peak, the second takes four bars to reach its peak. The first starts at F above middle C and moves diatonically to C, 2 octaves above. Each step is held under the next. The second phrase is a C major scale over 2 octaves starting on C below middle C. Note values are exact (although different for each note) indicating that they were drawn rather than played. The pencil icon was selected in the piano roll view. He has drawn multiple notes on each note creating a stuttering effect. The effect is lessened by the fact that each group of notes is of a lesser velocity (shown in Figure 5.30). These velocity patterns are regular.
Figure 5.30: Stuttering effect shown with velocity marks at bottom of the image

The Track structure is now as follows:

- Track 3 – (was Track 6) – Piccolo
- Track 4 – (was Track 7) – Tuba
- Track 5 – (was Track 8) – Steel Drum
- Track 6 – (new) – Reed Organ: 2 sets of rising chords
- Track 7 – (new) – Reed Organ (meant to be Track 10 – Drums)

It is represented below as Figure 5.31 as seen in the Track View
The drum track consists of steady quavers playing clusters of four toms. He recorded one drum only first and then overdubbed the others in a second take. The piece clearly ends with a cymbal crash.

Student R was quite happy with this piece and said that he preferred it to the other more jumbled versions. I agreed with him.

A significant compositional journey was undertaken by Student R in the creation of these pieces. There is nothing in the final result that indicates advanced understanding of musical convention as an adult or musician would see it but what there is in this series is evidence of musical thinking. The compositional process was influenced by many things but in my interpretation the greatest influence was the desire to compose. The repeated revisiting to melodic and harmonic development indicates awareness that these things were important in a composition. The fact that the final result is not ‘musically satisfying’ is not really of consequence. Here we see a child playing with the idea of composing and being thoroughly engaged with the process.
Another extended sequence of compositional process that fits within the category of playing with composition (it also fits with melody) is that by Student Na in her *Blue* series.

In this series Student Na spends a lot of time developing what in its completed form remains very similar to her first composition. The interesting feature of this piece is that she uses the pianistic approach that I have described above to play in her multiple tracks. Her approach is all about perceived style rather than actual sound.

*Blue* (Student Na) (24th August and 7th September):

As is seen in other compositions of hers and other children each track is made up of repeated series of notes that almost create patterns. Track 1 starts on A3 and moves as high as F4 (six white notes on the piano keyboard). This track is really made up of sequences of white notes played up and down the scale without moving (much) out of one hand position. Track 2 appears to have been played with two hands as the intervals are larger; there is a sense of two patterns; left hand and right hand. It has a more melodic sense than the others but is still really repeated patterns. Track 3 is a strongly repetitive use of the four notes E3 to A3. When played together they do not have any noticeable sense of belonging to each other but Student Na was happy with what she was doing.

She created another seven versions of *Blue* but the last six of these showed no saved changes. I don’t know if she made changes and didn’t save properly or just created new versions of the same thing. The final save was made in the piece *Blue2* (she appears to have doubled up with her naming of files). In this piece she has added one track (she now uses four) and assigned an extra patch. Unfortunately, she has only used two channels so that only two of the four assigned patches sound (in *Cakewalk* individual midi patches need to be assigned to their own discreet channel). The new track – bass lead – uses longer notes than the other tracks but still moves in the typical ascending and descending pattern. When played using the two sounding midi patches (bass-lead and steel drums) the effect is of an undercurrent of sound (bass and lead) gently and softly supporting the steel drum melody of Track 3.
It is unclear what Student Na intended as her reluctance to talk about her work and the very quiet voice she used when talking made all interactions with her difficult. The piece itself ‘works’ because of the use of the new patch but melodically it is very difficult to reconcile. The compositional act appeared to be the most significant focus in this process and she indicated that she was happy with the result.

**Playing with the computer/software**

As with playing with composition it might also seem unnecessary to include a classification regarding playing with the computer and/or with the software but it became apparent in analysis that the computer offered opportunities for compositional processes (beyond those already mentioned). Given that a major part of the research question is about the role of the environment in the compositional process it would seem that playing with the computer would be a significant feature of all of the compositions. It is also reasonable and accurate to suggest that the affordances offered by the environment (in particular the computer) are what are behind most (if not all) of the compositions in this study and that those affordances, and the perceived affordances, played a significant role in enabling the children to work in ways that were significantly different from those that have been reported in the literature. I include the computer and the software as a compositional influence here in order to highlight those compositions where it was the way the child played with the computer (and not other aspects like sound or look) that was the major influence in the compositional approach.

An example is the use of the wahwah effect across tracks in Student A and N’s piece, *Cookies Heavy Wang*. In this piece the boys both played different things at the same time while recording directly in *Audacity*. They did this over a number of tracks. The result was rather messy until Student A applied the wahwah effect over the melodic tracks, which created a set of frequency pulses that pulled the whole thing together rhythmically. This piece is analysed in greater detail in Chapter 6 and discussed in Chapter 4.

Students L and R provide a very amusing example of playing with the software in one of their very final pieces, *Who Knows*. This piece has already been mentioned earlier.
in this work but it needs to be mentioned again, briefly, in this section. The two boys had recorded themselves singing *The Drunken Sailor* and applied a reverse effect in *Audacity*. The title forms part of the composition because they wanted the audience to guess what the song was.

A final example of playing with the computer is the piece *Student Na1* by Student Na. In this piece she has used the pattern brush to draw sounds in to *Cakewalk* but does not appear to be drawing anything in particular. She has just created huge, held chord clusters. There appears to be no explanation for what she was doing except that she was playing with the computer. It may be that she was experimenting with the sounds that she was creating but I believe that her main influence here was what she could actually do with the software.

**Conclusion**

There is much in this chapter that could be told in a different way. Some pieces could be represented as playing with sound instead of playing with look, some could be shown to be genre driven instead of composition driven, or vice versa. This typology that I propose is not an exact tool, it is not meant to be; it is a developing typology not a finished one. Its purpose is not to prescribe definitive approaches, its purpose is to present the works of these children in new and very different ways. I believe it does that very successfully. The following chapter continues with the presentation of the children’s compositions in new and different ways by focusing on the remarkable rhythmic and melodic features present in many of their works.
Chapter 6

Significant Compositional Features

To promulgate a view of method and knowledge whose justification depends upon unfamiliar criteria is to risk cognitive dissonance. Many deal with such dissonance by rejecting the legitimacy of the approach (Eisner, 1988, p. 19)

There were specific common features identified amongst compositions from all children that led me to consider some important ideas about children’s musical understanding. The consistency of these features across many compositions and that they came from all the children add weight to my ideas. This chapter presents an analysis and discussion of a number of compositions in order to highlight these features. It further investigates what these features mean within the context of the study and what they might tell us about how the children in this study and, drawing on the methodological notion of transferability discussed in Chapter 3, how all children might perceive music and make meaning from it and with it.

The chapter then presents ways in which children’s compositions are typically represented in the music education literature and what that means to this study and to the way we investigate children’s music making. The following section presents the common musical features with a specific focus on rhythm and melody, and discusses their significance. While more than one feature frequently appears in a composition I have chosen to focus on individual features for the purpose of clarity in this section. I present these features mindful of the criticisms I have made earlier in this work and that I make in this and further chapters about attempts to present and analyse children’s music making from an adult, Western centred perspective. Discussion about rhythm and melody does not, however, necessarily assume that position. The features described here were important to the children and represent significant aspects of their music making. They serve to highlight the very different ways in which children can choose to make and perceive music. Importantly, the features presented in this chapter were features of what the children saw, for the most part, as successful compositions; compositions that were enjoyed and even applauded over repeated hearing and editing.
Even with the very unconventional use of musical elements that I present in this chapter there are examples of a real process of musical and creative discourse that occurred throughout this study. An example is the interaction between Students N and R when discussing each other’s works. The following transcription from 20\textsuperscript{th} July (including my comments to myself indicated with ***

\textsuperscript{)} demonstrates the level of discourse that sometimes occurred:

N (calling Student R): R, R listen to this, R listen to this. It gets really good after this part [7.50]

R is listening intently, he starts to groove to the piece, \textit{Windy}.

\[8.20\]
N: This is the worst part

R: It’s really low
N: I know and then all of a sudden it goes (he demonstrates fast notes ascending as he sings them)

***A good example of critical musical discourse about a particular piece of music. This is entirely student generated***

R: Not bad, now listen to this
N: (about his own piece, ‘Windy’) It’s a stone of art

N listens intently (in the background A is working solidly and starts grooving to his own piece)

\[9.14\]
N: That is so cool. I like it when it’s on Titanic then it goes … (again he demonstrates the rapid notes physically and sings them)
The boys are discussing each other’s works critically and constructively. They are also making comments about their own pieces that include melodic shape and tonal quality. Student N’s piece, *Windy* is discussed later in this chapter, while Student R’s *Titanic* is presented in Chapter 4.

In Chapter 5, I present a typology of compositional approaches based in play. In that chapter I go to considerable effort to describe, discuss and analyse a number of compositions in terms of what influenced their creation and what was the most important single aspect of those compositions from what I see as the child’s perspective. In the current chapter I present many of the same compositions (as well as different ones) in a discussion of rhythmic and melodic features. This might seem to be at odds with the previous analysis in that it is now attributing importance to features that were not of significant importance to the children at the time. This analysis, however, is important and necessary. Music is an auditory art; this project is about music and composition. The fact that the children composed some of their works by drawing, or based on how they looked, or what the environment afforded them, does not change the final auditory nature of the works. The rhythmic and melodic structures in the children’s compositions indicated to me a way of understanding, appreciating and perceiving music that was at odds with what I expected and with what I had seen represented in the literature. It is these features that I focus on in this chapter.

**The Compositions**

**Tempo and Rhythmic Structure**

Significantly important in Western music is rhythmic integrity. The constant four beat underpins the majority of musical works in all Western traditions from the Baroque to the present day, in jazz, pop and rock, in Western folk music, in Nursery Rhymes, in
film music and so on. Of course the three/four beat is apparent and other beat structures but overwhelmingly, Western music is about four beats to the bar and to a lesser degree three beats in a bar. Even in time signatures such as 5/4 or 7/4, the divisions are usually regular. There are, of course, examples of 20th Century music both in jazz and in art music where rhythm and beat are abandoned but these approaches were largely experimental and have not found their way into mainstream, or at least popular, acceptance.

The children’s compositions in the current study displayed rhythmic structures that indicated a perception of beat that was significantly different from my own expectations and to the typical structures of Western music.

In addition to constant beat, regular tempo is another significant underpinning of Western music. Tempo can change within a piece and different tempos are often used as a device for effect. Even when tempo is changed it is usually changed in a considered and regular way; works speed up, one section might be played faster or slower than preceding or following sections. It is very rare indeed for a piece to contain multiple tempos played at the same time. Specific examples of the use of this technique are from Charles Ives and Stephen Sondheim. Ives’s *Central Park in the Dark* and *The Unanswered Question*, “use loose but carefully notated superimpositions of stylistically distinct material in different meters and keys” (Swafford, 1998, np). Sondheim’s *Live, Laugh, Love* is a catastrophic representation of mental collapse in the musical *Follies* in which two sections of the same song play at the same time. These are examples of a specific musical device for musical effect and are used here to demonstrate the very unusual approach the children took to their own compositions as represented in this chapter. In this study the children’s pieces were frequently made up of tracks played at different tempos, they also feature apparently ‘random’ changes in tempo. In these compositions this device is not used for effect, rather it is used as a normal part of their music making. As described below, when I attempted to ‘improve’ their compositions by standardising beat and rhythm, the children were in no way impressed by my attempts.

The following section presents how rhythm and tempo were used in the children’s compositions
**Counting In**

In my life as a musician and music teacher I have always been surprised by the general lack of understanding about tempo. In my analysis of video and audio recordings of sessions in this study I noticed that the children did not consider tempo before recording. The most common way of starting the recording of a piece when working in pairs, whether that recording was the first track or subsequent tracks, was to use the device ‘ready … set … go’ or a variation on it. This phrase was never uttered in time; it was most often said with the ‘go’ happening very close to the ‘set’. Sometimes ‘ready’ and ‘set’ were completely overlooked and ‘go’ was all that was used to start the playing. Another method (used by Student R counting in Student L,) was counting down; “Ready? 3, 2, 1” (9.42, 7th September). Frequently the person ‘counting in’ was not the person playing and had no real idea of tempo as they were usually not wearing headphones, since the player required them. As an adult with considerable recording and performing experience this approach to commencing playing is alien to me. To the children it was the norm. The primary objective is to know when to start playing, not to know how to play. This lack of concern about tempo is made more significant when working in a multitrack environment. This environment allows the user to listen to other tracks while playing along, yet students who couldn’t hear what was being played provided the count in for the one who could. To me this indicates a child-specific perception about the role of tempo and the importance of rhythmic integrity. It also hints at notions about children hearing what they want to hear or think (or expect) to hear. This notion is presented in more detail in the section on melody, When wrong is right, below.

The first recorded instance of this approach occurred in week 2 (9th March). In this case Students R and N were working on a piece about ‘Shrek’, the cartoon character. Student R ‘counted in’ Student N with ‘Okay I’ll press record 3, 2, 1’ (12.45, 9th March). The counting in here had no bearing on tempo since there was no tempo in the piece anyway (it used spoken word) but the approach was used throughout the study.
When Students A and L were recording ‘fire’ for their *Dragon1* piece, the count in strategy was the same:

L: All right, are you ready to record?
A: Ready, set go (he hits the keys with his fist in a rhythmic way)
I: And what are you guys doing?
L: recording
A: That was fire

(50.33, 1st June)

Again, in this case accurate counting in was not essential to the finished product but it serves to highlight that the method of counting in was the same regardless of the nature of the product being recorded.

Students R and L count themselves into a sung section of their *Blue* piece. Here the product is reliant on tempo but the boys are unaware of that importance and count themselves in (both at the same time) with ‘Okay, ready, set … go’. They manage to sing along together but in this piece both boys begin clapping along as they sing, without regard for tempo. I had discussed with them about recording each part separately but they persist with the practice. Later in the same session (24th August) the boys use a similar counting in approach:

L: Okay I want to sing
R: Ready? 4, 3, 2, 1 go
R sings ‘blue-ooh’

(19.48)

Here we have the count down rather than the count in but it still has no time-based bearing on the tempo of the piece being recorded.

About one minute later Student L gets his turn at singing. Student R again does the count in (count down), this time he extends it, starting at 5:

They prepare to record again
R: Ready? 5, 4, 3, 2, 1
L: Blue
He then stops and looks at the screen before starting to sing
‘Blue, blue, magical blue’

I am watching ready to interfere

L: Blue, blue, made this song for you
(20.30, 24th August)

In this example we can see that Student L responds to the count in as a cue to commence. He starts singing but then stops and stares at the computer screen, even though the piece is being recorded, and waits before starting to sing again. Student R has counted him in (even though Student R has no point of reference for tempo since he can’t hear what is happening) and he has responded. He is, however, not really interested in rhythmical correctness, rather in the correctness of place within the piece; the vocals need to go in a certain place, regardless of whether or not they are actually in time, the visual representation is enough for him.

An example of an attempt to set tempo and provide a proper count in was in the piece, 19th Oct (same name as the day it was recorded), in which Student R told Student L to wait while he did a count in. Student R’s attempt was interesting and noteworthy. They were using a drum patch on the synthesiser at the time and Student R played in a typical 2 minim, 4 crotchet rock style count in. There were a number of significant features of this count in; first was the fact that he did it at all, this I suspect is because they were working with drums and trying to create a rock style piece – it became an appropriate way to begin the piece. Second, Student R had no idea of the tempo of the piece when he counted it in and was in fact counting it in at about 250bpm; Student L played it at around 98. Third, after Student R counted Student L in he had to turn away from the computer and press record, thus rendering the count in meaningless musically (even if it had been in time). He missed the record button and they had to start again. Fourth, Student L seemed to think that this was completely normal and part of the process. He allowed Student R to do it and then waited for him to do it again for the subsequent take. He paid no attention whatsoever to the tempo, only to the count in as a cue to start playing. The following annotated transcription presents
the conversation between the two boys about the count in and my observations of it during analysis of video data and music files.

R (to L): Do the 1, 2, 3, 4 and then play (L doesn’t)

R: You’re going to do your special thing down here (points to the area of the synth) and I’ll count you in. Ready?

He plays minim, minim, 4 crotchets using a wood block patch at about crotchet = 250 then turns quickly to the computer. L plays his ‘special thing’ at about half that speed

R: Hang on, start again

He had missed the record button so plays the ‘count in’ again (this time at about 190bpm) with one hand ready to press record

L plays at his own tempo – this time at about 85bpm. Both boys look happy.

(9.27, 19th October)

This transcription is of interest because it shows how important the count in process was to the boys. The fact that it was musically irrelevant or completely wrong doesn’t matter; it was essential to the compositional process. It also highlights a lack of regard for consideration of tempo and of understanding of its conventional function.

I stopped him playing in a further count in when I misinterpreted his actions. Thinking he was going to play along with Student L I told him to stop and record each section separately. In this third instance Student L was going to play an additional drum track; Student R had no way of knowing what the original tempo was and accordingly no way of accurately counting Student L in.
The role of ‘one’

Further to the absence of understanding about accurate counting in, or to the complete lack of importance accorded it by the participants, was the absence of any significance given to the place of the first beat in the bar. Accurate placement of ‘one’ is achieved purely accidentally by Student L in his piece, *Rugrats3*, the third in a series of *Rugrats* versions.

In this version L has removed a ‘drawing’ of a guitar from the piece and has imported an additional drum track directly from the *Cakewalk* drum styles. The second track was imported so that it started at the first beat of the bar. There was already one drum track in the piece, which also started on the first beat. In both tracks Student L applied non drum patches; one a baritone sax patch, the other syn drums. So rather than playing back as drums they played back as baritone sax and syn drum. The original drum style was *R&B 120 Funky snare train* (the 120 refers to the drum style tempo – 120bpm). The second drum style used was *Hard Rock 118 Heavy metal*. Even though its original tempo was 118bpm, when it was imported it played back at the set tempo of 120bpm. The rhythmic integrity of the piece disappeared when the melody that Student L played in started. Student L had been trying to find a ‘farting’ sound for this piece, which is why he selected the baritone sax patch. In the following transcription Student L discusses with me what he was doing in this fascinating musical piece:

I: Now what are you going to do to it?
L: I don’t know
I: What have you got there? Describe what you’ve got there; I’m going to bring the camera over
L: it’s just drums and a … bouncing boing

I: Okay L tell me what you’ve done
[16.30]
I: I’ve copied drum maps off Cakewalk and then I’ve stuck ‘em on here and then I made the bouncing boings
I: How did you make the ‘bouncing boings’?
L: I don’t know. I didn’t even know I had it. I just brought it in and it was there

(3rd August)

Student L really liked this piece (as did the other children). It seems that he really didn’t know what he was doing but that what he did was very satisfying despite its dissonance.

Student N’s remarkable sounding series of compositions entitled *Windy* demonstrate how that even when using the pattern brush feature in *Cakewalk*, rhythm can be at odds with beat. In these compositions Student N has used the pattern brush feature to draw what look like wisps of wind (or birds) on the piano roll; these ‘wisps’ move in ascending and descending patterns across the page. Figure 6.1 is a combined view of the two ‘wisp’ tracks taken from the piano roll view.

![Figure 6.1: Combined view of Windy](image)

Even though he has used the pattern brush set to a crotchet value, he commences his ‘wisps’ at different points on the page; sometimes starting on the beat, sometimes off the beat. The effect is a pulse that moves in and out of rhythmic phase; even though it is very steady there is no indication of where the beat lies. Below these ‘wisps’
Student N drew a bridge (Figure 6.2). This bridge consists of layers of drawn notes of varying degrees. It is placed very low on the piano keyboard and rather than confirming a sense of beat it further confuses it.

![Figure 6.2 ‘Bridge’ in Windy](image)

A final stage in this compositional process (although he made further changes in the following week) was for Student N to add a drum track. He did this by using the pattern brush and painting in a preset pattern, *Funky 3*. The pattern is designed to provide users with a repetitive kick and snare pattern that can be added to as seen fit. It is a one bar pattern that is represented in conventional notation in Figure 6.3.

![Figure 6.3: Kick and snare pattern](image)

Student N used this pattern but started it off the beat and then drew over it again and ended up with the pattern shown in Figure 6.4. Apart from the first bar, this pattern is also a repeated one bar phrase. To add to the rhythmic turmoil, Student N started the drum pattern after a dotted quaver rest in the third bar.
As a result the pulsing, rhythmically ambiguous piece that consisted of the wisps and the bridge turned into a rhythmically dissonant piece. Throughout the compositional process Student N reaffirms his pleasure with his piece. He notes that his bridge is better that Student L’s, who originally had the idea of a bridge, and at the end of the session when I tell him that this is the best saving he has ever done (he had problems with this aspect throughout the project), he replies; “And this is the best thing I’ve ever done” (44.27, 20th July).

Student N’s, *Windy*, is just one example of the children’s ability to subvert the rigid and formal rhythmic structure of *Cakewalk*, an application built around the use of metronome and time codes. The subversion seen here is not a deliberate attempt to bend a software application to the will of the child but rather is a wonderful example of what Papert (1993a) calls the subversive power of computers to become knowledge machines rather than instructional devices.

**Rhythmic Dissonance**

Given the lack of understanding of, the lack of significance attached to, or the lack of perceived need for counting in and acknowledgement of tempo it is understandable that further rhythmic anomalies occurred throughout the study (it is possible, although not established that a conscious decision was made to work outside of established convention). Analysis of pieces indicates that in the electronic environment individual tracks appear not to be seen by the children as part of the whole in the same way as an adult might understand, or in a way that I expected. There are numerous examples by all children in both software environments (*Cakewalk* and *Audacity*) that show a complete lack of awareness of rhythmic consistency across a piece of music. What is most remarkable is that the children did not acknowledge this dissonance when they played pieces back.
Rhythmic dissonance came in a number of forms but it was a significant feature in many pieces. All four boys made a lot of use of the Cakewalk drum styles. These drums styles have been described earlier but are sets of drum patterns designed to be cut and pasted within a piece. Each style contains a number of (usually four bar) variations on a particular rhythmic style. Each style is about 70 bars in length. Styles favoured by the boys were those of the Heavy Metal/Hard Rock type. There were occasions when the girls used drum styles as well but not as many as the boys. One significant example was Student C’s Little Princess piece (discussed in detail in Chapter 5). When using drum styles, rather than cutting from the drum style and pasting sections into their own pieces children tended to use the whole track. This does not lead to rhythmic dissonance but it does highlight how they perceived these tracks; as one piece rather than as many versions of the same thing. If a drum style was shortened it was done so to fit the length of the piece rather than to highlight a particular rhythmic variation.

Rhythmic dissonance when using imported patterns was most noticeable in Audacity. This is because Audacity does not have a metronome or tempo default that operates in the same way as in Cakewalk; it is not a midi recorder so that feature is not supported. The drum styles open into Cakewalk as independent projects with their own appropriate tempo settings. The children would either copy and paste this track into their own Cakewalk piece or they would play it in via midi and record it directly into Audacity using the Stereo Mix input device. In order to achieve this they needed to click record in Audacity and then play in Cakewalk; Audacity does not have a midi sync function, like some digital audio recorders, that allows the operator to synchronise a digital audio program with a midi sequencer so that both programs start at a set point in time. This means that the drum track is not placed at the very start of the track; it needs to be moved later. If the children then wish to record another drum track into Audacity, the same process is repeated. This results in the second drum track not playing in sync with the first, even if they are in the same tempo. To add to the dissonance there were occasions when children used two different drum styles and recorded them directly into Audacity. As each drum style is created in its own appropriate tempo and then played directly into Audacity from its original project, there is no chance for the tempos to be reset; not that the children even considered this
necessary. The result is a piece of music that has two or more completely different drum styles, playing in completely different tempos.

Extreme rhythmic dissonance is apparent in many pieces. When the children worked in Cakewalk this dissonance was usually caused by playing a melodic piece that was rhythmically at odds with the drum tracks they imported or played in. The use of the pattern brush to ‘draw’ compositions also was responsible for some of the dissonance typically because the starting point for the ‘drawing’ had no relationship to where ‘one’ fell. This is probably not surprising given that the children were in fact drawing pictures rather than writing musical notes but as their drawings progressed and started to include considerations of sound (Student R’s Dolphen (sic) piece is a good case in point) there appeared to be no attempt at rhythmic consistency.

My first example of rhythmic dissonance is from a piece created entirely in Cakewalk. I have already indicated that Student L’s Rugrats pieces contained rhythmic dissonance. Although Student L used a drum style with a set tempo of 120bpm, he played his melody in at a completely different tempo. The melody and the title of the piece come from the Nickelodeon cartoon of the same name. The theme song by Mark Mothersbaugh was approximated by Student L and was used in this piece. When Student L played in the piece he did so using a tempo of around 98bpm. The result is a melodic line at one tempo and a rhythmic line at another. This did not worry him in the least; he considered this one of his favourite pieces. His second version of the song contained a guitar drawn onto the piano roll and played back with a guitar patch (Figure 6.5). The drawing was done in crotchets and even though it plays back at 120bpm it has no rhythmical or melodic relevance to the other tracks. Student L removed it for versions three and four but did not say why.
A very early piece by Student K, *K1*, was created by layering a series of pre-recorded sounds that I had provided the children. For the most part the sounds were rhythmically compatible, four bar sections. One piece was a hip hop style drum beat and one was a ‘merry go round’ style piece played in three. K managed to layer all of those pieces and included a section she recorded from the school’s PA system of *Johnny B Goode*. Of course *Johnny B Goode* did not fit, neither did the section in three but K was happy with the piece and indicated that it was a finished composition.

Students A and N were responsible for a very interesting rhythmically dissonant piece, *Dead Rock*. Even though Student A went on to rearrange it (also without consideration of rhythmic harmony) the original piece is particularly worthy of discussion here. The piece is the boys’ most serious attempt at producing a Rock song for their ‘album’. In it they have taken three different drum tracks, imported them separately into *Cakewalk* and then recorded them into *Audacity*. Each drum track has its own tempo:

- Track 1 – approx 112bpm
- Track 2 – approx 120bpm
- Track 3 – approx 150bpm

After these tracks had been placed into *Audacity* the boys were very happy and wanted to show me. I couldn’t believe it and tried to move the tracks around for them so that they were aligned (not that that was possible given the different tempos). The following transcription details this action:
A: This is our ‘Dead Rock’ song
I: Why would you want three drum tracks?

I move something the boys yell
A and N: NO!
I: Shush,
A: MR REYNOLDS
I: No, this … oh it won’t do it (I can’t move the track)
N: Exemplary
(20.23, 7th September)

Over the top of these drum tracks is a remarkable, extended vocalised guitar solo by Student N. This solo has its own tempo structure (in relation to the drum tracks) but within that it is quite stylistically ‘correct’. It is not surprising that it has its own tempo structure since Student N performed it without the aid of headphones; he couldn’t hear the drum tracks and to finish relied on Student A to stop him. The solo starts off at around 126bpm and after just less than four bars moves to a half time feel at around 78bpm.

To complete the piece a bass line (approximated in Figure 6.6) was played in using the synthesiser. This bass line’s tempo is about 150bpm. The bass line lasts for approximately 13 seconds of the 31 second piece.

![Figure 6.6: Approximation of Dead Rock bass line](image)

Thus the piece is constructed rhythmically and instrumentally in the following way:

Track 1 – approx 112bpm (drums)
Track 2 – approx 120bpm (drums)
Track 3 – approx 150bpm (drums)
Track 4 – starts at 126, drops into 78 (‘guitar’)
Track 5 – approx 150bpm (bass)

Even though Tracks 3 and 5 are both have the same tempo, Track 5 doesn’t start on the first beat of the bar (there isn’t one). Figure 6.6 (above) is a representation of the tonal structure of the bass line only, not of where it fits contextually within the whole piece. It is reproduced graphically as starting on the first beat of the bar; this was in fact, not the case.

Figure 6.7 shows a section of the final work, as it appears in Audacity, in which I have drawn lines at points in order to demonstrate the rhythmic dissonance. The lines have been placed to correspond with the fall of the beat in any track; not to represent beat for the piece as a whole. Wave peaks indicate beats in the first three and the last track, the fourth track is the solo.

![Figure 6.7: Dead Rock with non-alignment of beat indicated](image)
The overall effect is somewhat messy but not as difficult to listen to as one would expect. The drum tracks work against each other and there is no real sense of beat except for that provided by the voice and bass tracks. These two tracks, even though they are rhythmically opposed to each other and to the drum tracks present a certain force in the piece that drives it. The piece has the features of a heavy metal composition without any of the accuracy of a driving, steady four. Yet the boys, and the other participants, really liked it. They were all amused by the vocal solo but the piece was considered to be successful.

Student A later modified the piece in a series of compositions (Hard Rock – open hat, open hat2, 3, 4, 5, 6 and finish) while Student N was absent. His modifications, however, focused on the vocal solo not the rhythmic integrity. He thought that the solo was too much and decided to cut large sections, choosing to repeat one section throughout the piece and use another section once. He also replayed the bass line. He eventually deleted two of the three drum tracks and ended up with a piece that was less messy rhythmically than the original Dead Rock piece but that still contained four distinctly different rhythms and tempos all playing at once. Figure 6.8 is a four bar phrase from the final version in Student A’s series, using the drum beat to set tempo. The green lines represent where the first beat of the bar falls in the drum track, the red lines represent the other three beats. It is quite apparent that the beats do not fall in the same places across all four tracks. This figure only presents beat; it is not possible to represent feel in this way.
In the piece, *DJ Music A&L*, by Students A and L, the *Deep Purple* song, *Smoke on the Water*, makes the first of many appearances. In this piece the boys have layered two versions of the famous riff (both incorrect). Figure 6.9 shows how the two tracks are rhythmically opposed to each other when placed on the same stave. I have used a quaver as the smallest value in this example taken from *Cakewalk* for the purpose of clarity.

![Figure 6.8: Representation of steady drum beat against other tracks](image1)

**Figure 6.9: Two versions of Smoke on the Water played at the same time**
They have managed to start the piece at the same time, although I suspect that the tracks were aligned after recording or it was one recording that they have split and moved, but the rhythmic and melodic clashes are quite clear in the above figure. Significantly, when the boys proudly showed this piece to me, they informed me that the two tracks were the same thing. Student A described it like this; “It’s two things playing the same thing; there’s a xylophone” (7.36, 27th April). To further add to the rhythmic dissonance a third track was recorded that consisted entirely of rapidly played chords in a random pattern, these chords indicate a complete lack of acknowledgement to rhythmic structure.

The series of Blue pieces by Students R and L is described earlier in this chapter when discussing counting in, it is also presented in Chapter 5. I use it again here as an example of rhythmic dissonance; or at least as an example of the lack of importance given to accuracy of rhythmic representation.

Blue1 contained a song about blue, sung by the boys and supported by a drum track that had no rhythmic synchronisation to the melody; being added after the melody and being of a different tempo. This approach to rhythm is remarkable in itself, although not unique within the context of this study. What is remarkable is the way the boys added a clapping track. Student R had wanted to clap along to the melody and in rehearsal had done that. The boys had clapped along when recording the melody in the first place but that recording had not worked. I had witnessed this attempt and had advised them to record each component separately, given that the software environment allowed them to do that. The environment also allowed them to slide the tracks in time so that they aligned. When I demonstrated this to them they were not at all interested.

The recording of the clapping required some musical negotiation and some technical coordination. The boys had one set of headphones between them but both wanted to record at once. The following is from my session transcription:

L: Ready, set, go
L starts clapping
[27.20]
R: No our clapping beat’s like this …
He claps a repeated crotchet, semi quaver-dotted quaver beat. L joins in

They get ready and count themselves in (R can’t hear what he’s clapping to, I’m not sure about L who has headphones on but R knows exactly what the tempo and beat is so L follows him. I try to count them in but L has other ideas

L (Whispering): 3, 2, 1

The boys stare intently at the screen and clap away. They are both concentrating hard and have smiles on their faces. The clapping gets a bit out of time but they both know exactly how long it should be by watching the other tracks
(27.47, 24th August)

The process of negotiating the beat is clear in this example. What is remarkable is the way in which the boys clapped along without concern for the original beat. Even though Student L had the headphones on he was happy to be led by Student R, who wasn’t wearing headphones. When they played it back they were very happy with the result.

I tried to ‘correct’ the piece for them by explaining that it was out of time and that they could possibly manipulate it back into time but they were not interested:

I: What’s wrong?
[28.49]
L: That’s where it needs to end

He is pointing to the track where the drum section is longer than the vocals

I: No, that’s fine. This is out of time
I’m talking about the clapping track. I play it again

R: They’re out of time
L: It sounds cool

Even though Student R says he notices that they are out of time when I tell them, he doesn’t see any cause for concern. Student L is only worried that the tracks don’t end together; not that they don’t sound together.

Students A and N produced a remarkable rhythmic piece. It only used percussion and despite its cacophonous and irregular sound was one of their favourite pieces. The name, The Big Bite, comes from the name of their ‘band’, The Cookies; the boys were playing with names and came up with this. It seemed quite logical and amusing to them that you would take a big bite out of a cookie, so the name was used.

The piece consists of four tracks of percussion all played in (as opposed to imported through Cakewalk), each lasting approx 42 seconds. In each track both boys play at the same time (both using the same keyboard), so there is considerable rhythmic variance.

Track 1 is driven by a regular cymbal crash that holds a very steady pulse of approx 90bpm. This is accompanied by toms that do not have the same regularity. Track 2 is driven by a regular quaver tom-tom beat at approx 96bpm. The irregularity between Tracks 1 and 2 is less noticeable than one would imagine as the cymbal seems to hold them together. The nature of the cymbal crash (it sounds like a splash cymbal) combined with the toms is very reminiscent of a Chinese lion dance. These two tracks work well together and are somewhat sympathetic to each other.

Tracks 3 and 4 clash with Tracks 1 and 2 but work well with each other. Track 3 uses toms of different pitches alternating over quavers at 150bpm. Track 4 is mostly a handclap patch played in an unusual rhythmic cycle. It consists of groups of semiquavers played as; a group of six – rest – group of three – rest – group of four – rest. I have reproduced it as notation in Figure 6.10 below.
This is repeated very consistently through the whole piece. Figure 6.11 shows how it is presented in Audacity.

I find it very interesting that the complexity of this rhythm still fits into four beats. Played together the piece is an exciting cacophony of rhythm.

The second and final version of this piece was The Big Bite 1. It was the same four tracks as above with two new percussion tracks added:

Track 5 is a maraca played in what appears to be a triplet feel at crotchet = 86 (approx)
Track 6 is a hit tambourine (skin is hit so a drum sound is produced with jingle sounding as well) quavers played at crotchet = 100 (approx)
The volume on Tracks 2, 3 and 4 has been reduced, which signifies that a conscious decision was made about how the piece should sound.

Both boys were very happy with this piece. Student N, in particular, was very excited about it and thought it sounded ‘fantastic’. He was playing air guitar to it and was moving and playing in time with the cymbal crash.

The transcription of the session for that day (19th October) details their approach to this composition and what they were thinking at the time.

N and A play their loud and messy drum track.

[22.42]
N: That’s fantastic
I: What happened guys, did it sound rubbish?
N: It sounds fantastic for our new album
   N starts playing air guitar and rocking to the cymbal crash

I: Okay now you’ve got to put music to it.
A: Yeah
I: Okay choose a nice sound here. Sounds good.
   A is playing quavers with a tom-tom sound
I: I think you might have enough drums
A: Never enough drums Mr Reynolds

As they developed this piece they used a real tambourine to produce a drum sound. In my notes of the transcription I note that Student A plays along with the recording but he can’t hear it. His playing is rhythmically consistent but he isn’t wearing headphones and can’t hear the other tracks. Accordingly, he is out of time with those tracks.

When the boys had completed the piece to their (and not my) satisfaction, Student N comments that they are creating a ‘beautiful album’. Student A describes The Big Bite as ‘a heavy racket’ to which Student N replies; ‘this album will make us really famous.
A’. When I listened to it with them, I wanted them to include some melodic aspect. The following transcription shows the difference in perception about ‘notes’ that the boys and I had:

[37.17]
I (to A and N): Now you haven’t got any notes in there
(I am referring to the lack of melody)
N: Yes we have we’ve got lots of bang and crash
A: We’ve got lots of notes that’s B and C

I noted at the time that it was interesting that both boys saw that the rhythm parts constitute notes but they saw it differently. Student N saw the bangs and crashes as notes, while Student A equated the notes on the keyboard as melodic even though they were only used to play drum sounds.

Students A and N produced yet another piece that was remarkable for its rhythmic dissonance, *Cookies Heavy Wang*; this piece is also mentioned in Chapter 5. The series of compositions that contributed to the final piece show an interesting compositional journey that concluded with an unexpected result. The boys managed to both play at the same time while recording. There was no suggestion that they needed to play in time or the same thing. The genesis of this work follows:

**Cookies Heavy Wang**
Track one is a steel guitar patch featuring the boys playing together – one the right hand (A) the other the left (N). The right hand is repeated quaver chords of D and A (crotchet = 138 approx). The left hand is also quavers (not quite in time with the right) playing A to C. At somewhat random intervals the quavers become semi quavers and then back again

Track two also features both boys playing at the same time; one at each end of the keyboard. The patch is music Box. The right hand is quaver chords again, this time E and G (at the end it moves to F and G – don’t know if this is deliberate or just a slip of the finger). The quavers are actually triplets (crotchet = 90), which makes for an interesting rhythmic clash against the first track. At times the triplets give way to straight quavers. The left hand is harder to pick; it is made up of seemingly random
low chord clusters in what sounds like an E to B tonality. There is some indication that the notes E and B feature in a pattern amongst the chord clusters. The track fades out at the end. The piece lasts a bit over ten seconds.

**Cookies Heavy Wang**

Both original tracks have been treated with a wahwah effect. This changes the rhythmic feel of the tracks from quavers to crotchets. This is because of the default wahwah setting; it has its Low Frequency Oscillation (LFO) set to 1.5 Hz, doubling that frequency would have maintain the quaver feel. The boys just applied the default setting across both tracks.

Two new tracks have been added. Both tracks are drum styles recorded directly from *Cakewalk*. The styles are different and have different tempos (one being 92 bpm (approx) and the other 100). The result is very rhythmically unsettling. Figure 6.12 shows how the beats don’t align.

![Figure 6.12: Indication of beat in *Cookies Heavy Wang*](image)

The rhythmic disturbance (or lack of acknowledgement of importance of beat) is exaggerated when the other tracks are included. The original quaver tempo (and triplet quaver tempo) has been overridden by the wahwah. Both tracks now sit together rhythmically at approx 94 bpm. The two drum tracks clash with each other and the chord tracks.
**Cookies Heavy Wang**

A bass line that consists of a repeated pattern of B (quaver) low C (semi quaver, semi quaver) has been added. Its tempo is about crotchet = 68. It is played very consistently and is completely at odds with all the other tracks rhythmically. Harmonically it sort of fits producing an overall C maj7/9 chord sound.

**Melody**

The following section looks at how melody was used throughout the study and presents examples that demonstrate the way the children worked with melody and my understanding of their perceptions of it within their work.

In the previous chapter I discussed playing with melody as a compositional approach. I this chapter I discuss the ways melody was used and the significant features of the use of melody. As with the section on rhythmic structure, the children used melody in very different ways to those that I had expected or experienced previously.

As part of the discussion on melodic features I include melodic and harmonic dissonance as well as the notions of ‘rightness’ and ‘wrongness’. In the following transcriptions I present the interactions between Students A and N, and me. In them Student A is playing with the Harry Potter theme. I include it to highlight an approach to melody and that sense of ‘rightness’ and ‘wrongness’. It is clear from the following transcriptions that Student A gets the tune ‘right’ and ‘wrong’ but does not appear concerned about it. This transcription also contains examples of typical counting in practices, melodic dissonance and pattern transposition without reference to intervals.

A’s piano playing is getting louder – he is now just playing anything; random notes and chords. I stop him

L runs his hand down the length of the synth on the white notes. He stops R and gives him the headphones, and does it again

[2.04]
A plays a deliberate tune

![Image 1](image1.png) 

**Figure 6.13:** Student A’s *Harry Potter* first attempt

He extends it

![Image 2](image2.png) 

**Figure 6.14:** An extension of the *Harry Potter* theme

N adds a section over the second phrase

![Image 3](image3.png) 

**Figure 6.15:** Student N’s interference

While L has the headphones off he hears A playing around with the tune as shown above

L: That’s *Harry Potter* (he sings the line)  
A: I know

I: Use it. Do something with it
A plays a few more notes but then gives up

A: I don’t know how to

N has a go so A demonstrates. This time he plays it much faster (as if by rote) only he starts on C instead of F

\[\text{Figure 6.16: Student A’s } \textit{Harry Potter} \text{ with ‘wrong’ intervals}\]

He plays (almost) the correct pattern but the first interval is a minor 3\textsuperscript{rd} rather than a 4\textsuperscript{th} as in the first piece

N: That’s a good thing for our next piece
A: I can’t keep doing it though
(talking about ability to play it – and to play past that phrase)

I: You don’t need to do many, just do one and copy it many times

Even after 23 weeks they are still not getting the idea of copying and pasting the same phrase over and over. Although I think that A’s concern is more to do with the overall integrity of the original piece

I play it for him, based on my last hearing of it. I play it starting on C. He moves back to F (when he was in C he was working higher on the keyboard to show N)

He decides that he can record it. He gets N to operate the controls

[2.56]
N: Ready? Ah-one, ah-two, ah-one, two, three, four
N counts this in at crotchet = 166, A has been playing at about 70;
when he starts after the count in he plays it again at about 70.
A starts playing, he stops and points to the computer and tells N to do it in *Cakewalk*.

A and N are having trouble. I go over and point out that they have the microphone selected.

A records his piece and looks a little uncertain about its quality.

This was not the first time that A had played with the idea of Harry Potter. On 15th June, while getting ready to get to work A is heard playing with the same theme.

**When wrong is right**

Throughout data collection, analysis and re-analysis I came across a number of examples where children played the wrong notes of a familiar piece of music and yet were completely satisfied with the results. This is not really surprising when taken in a non-electronic environment since the played piece is gone once it has been played. In an electronic environment like the one in this study, children recorded their mistakes, played them back and kept them; sometimes congratulating themselves or their colleagues on their prowess in getting it right.

It occurred to me that these mistakes happened in two distinctly different ways but the resultant satisfaction with the recorded (incorrect) piece was the same. I began wondering that perhaps even though the process of making the mistake was different, the process of hearing it was the same; the child’s perception was that is was correct and this perception was enduring.

In the same way that when we read words on a page, we (I know I do) read what we think is there, what we think should be there, or what we think we have written. Despite multiple readings mistakes that might be obvious to another reader (although not always) remain undetected by an author. Why should this be any different when listening to music?
The two ways that children ‘got it wrong’ were; starting on the wrong note, and just not getting it right but making a recognisable approximation.

In the above section on rhythmic features I have used the examples of *Smoke on the Water* in *DJ Music A&L* and Student L’s *Rugrats* series. In the following section I will again use these examples as well as other attempts at *Smoke on the Water* and other pieces.

*Rugrats* is significant because Student L, the child who played it, was very happy with it and because the other children recognised it as *Rugrats* when they heard it and were congratulatory of the attempt. The following annotated transcription shows what occurred when Student L created it and Student R’s somewhat incredulous response.

I: No, you were looking so enthusiastic then. What were you doing?
L: Oh I kept on getting it wrong
I: What were you trying to do?
L: I don’t know… I was doing the *Rugrats*
I: Oh well keep saving
L: Listen

He removes the headphones and plays it. R listens as well

The *Rugrats* theme, complete with a drum track that almost fits, impresses R. L is very happy with himself

[29.39]
R: Did you make that? (He sounds amazed)
L: Yeah
R: How?
L sings
R: How?
L sings
R: How did you make that L?
R: How did you do that L?
[29.57]
R: I’m not impressed with you.
An interesting comment from R who is obviously very impressed with L
(27th July)

The fact that Student L says that he keeps getting it wrong is interesting as well. He removed a section of the melody before he played it out loud and looked very happy with himself. My assumption is that the part he removed was the part he was getting wrong, not the part he kept. The software probably assisted Student L in his recognition of the piece as it allowed him to discover a sound that sounded like the original. Figure 6.17 is three bars of Student L’s attempt at the melody. He gets the rhythm quite close (starting off the beat) but starts the theme using D and F (rather than C and E) – minor third rather than major third. This changes the whole melodic sense, even though he is quite close to the actual theme. Figure 6.18 is the first two bars of the original theme.

![Figure 6.17: Student L's Rugrats theme](image1)

![Figure 6.18: Original Rugrats theme](image2)

This piece endured many revisions and additions over a period of weeks from 27th July to 10th August finishing with Rugrats6. Throughout all of these revisions no further editing was made to the melody except that a section was copied and pasted at the end of the piece.

Another example of ‘wrong’ being ‘right’ (this one was also a shared experience) is Students L and R’s Rock and Ropll (sic)

R: Here’s the song. I have a banjo in there
I: Where’s the drums?
R: I don’t know
L: Oh, the drums come after, in a moment
R: Yeah, they’re after it

***Here we have the boys very happy with a piece that represents three completely different and unrelated sections, none of which play at the same time. Yet it is a ‘song’ in their minds***

N has got A’s attention

N: Alright, come on, let’s save it A. Big Bite One

R is very keen for me to hear the banjo. It plays and he is excited
I: That’s good but why isn’t it playing over the (I sing the bass line)?

[38.00]
R: Because it’s a solo
I: Yes but when there’s a solo there’s often other things playing under it
R: So what? This is a solo without other stuff

I can’t argue with that so leave him to it (19th Oct)

This shared idea that the banjo should be heard as a solo makes perfect sense when explained by Student R. He is correct but in the context of this piece and what I think he is trying to achieve, he is quite possibly ‘wrong’ but he is very happy.

In their analysis of one child’s piece Nilsson and Folkestad (2005) note that she plays a Swedish song, Spain, in the wrong key; playing it in A minor instead of C major. Of course the relationship between those two keys is obvious to musicians (they are in fact relative to each other, sharing the same key signature). A child with no musical training does not understand that relationship. She is just playing white notes. I witnessed similar ‘mistakes’ from my participants on more than one occasion; in particular when playing Smoke on the Water. My thinking is that there could be a number of explanations. The child is aware of certain patterns (rhythmic and melodic)
and reproduces them, she either doesn’t know (can’t remember) the starting note, but
does remember the relationship between notes – up one step, down two steps – when
she plays the tune she is hearing what she expects to hear; so she is playing it
correctly. The fact that she has got the wrong starting note does not matter to her.

It is similar to touch typing in many ways. I can sit here typing, fully aware of the
patterns of the words I am writing. If I start on the wrong key but still use the same
pattern, the result will be ‘wrong’ even if while I am looking at my notes or at some
text I am transcribing, I type the word correctly.

For example if I type the word melody but start on ‘n’ instead of ‘m’ I get ‘nwkist’, if
I moved one key to the right I’d get ‘,rpfu’. Of course this is an artificial example as I
looked at the keys to make sure I got the word wrong, but the pattern of reproduction
was correct and I have typed words completely wrong when not looking at the
keyboard; it’s what made me think of this connection. It is a relevant example when
talking about the way children relate to their reproduction of music. The significant
difference is that ‘nwkist’ bears no resemblance when spoken or read to the word
‘melody’ (or any other word in the English language), the melodic approximations of
children do resemble the original in melody, rhythm and structure.

**Getting it wrong together**

I discovered that the perception of ‘rightness’ was not only an individual perception; it
appears to also be a shared perception. I have discussed how Student L’s Rugrats
pieces were accepted by the group; this is an example of a shared listening perception.
The following examples present compositions where the actual playing and recording
of wrong notes was collaborative and was collaboratively seen as correct.

The Bear series (both entitled Bear1) of compositions by Students L and R provide
fascinating examples of shared ‘getting it wrong’. The original piece, Bear1 (31
August), featured Student L singing the Disney song Bear Necessities, with Student R
singing and clapping along (in time) in the background. A week later when the boys
revisited the piece they attempted to include sections of the piece, Zebra, by the John
Butler Trio (Butler, 2003); this is where the ‘shared getting it wrong’ occurred. It is
not clear to me how they hit upon the idea of using *Zebra*. The passage that they were referring to is presented as Figure 6.19.

![Figure 6.19: Transcription of Zebra riff](image)

The following section presents what happened:

Early on in the session of 7th September the boys listen to what they did in the previous week. They listen intently as they play it back and Student L decides that it needs a ‘rock’ ending.

L: And then it goes (he sings and acts out an ending that involves a descending melodic line with a cymbal crash at the end. It is a typical ending pattern)

R: You’re going to do that. Are you ready? 1, 2, 3

L starts playing but from the look of things, what he plays bears no resemblance to what he just sang – it is a continuation of what he was playing before (12.07, 7th September).

Student L then plays in a slow rhythm pattern (kick, snare, kick, kick snare – in the style of *We Will Rock You*). He records this track without listening to how it relates to the vocal track and asks Student R to tell him when to stop. The boys listen again (they still haven’t done Student L’s ending) and Student R asks what are they going to do now. The response is for both of them to start playing with sounds on the synthesiser. They decide that they want a guitar sound. While they are fiddling with sounds Student R sings a small section of *Zebra*; this appears to be what started the collaborative effort.
Student L wants to listen to their Blue piece from the week before. He listens and enjoys it. When he finishes Student R sings the seemingly unrelated tune as approximated by me in Figure 6.20

R: It goes (sings) bah, bah, bah, bah (19.27)

![Figure 6.20: Student R's first Zebra attempt](image)

He then plays the piece on the synthesiser, I can’t hear as he has headphones on.

R: I did it (sings again) (Figure 6.21)

![Figure 6.21: Student R's second Zebra attempt](image)

L: it’s more like (sings) (Figure 6.22)

![Figure 6.22: Student L's first Zebra attempt](image)

L is playing as he sings but he can’t hear what he’s playing

L: Oh no, give me the headphones

R resists

R: No, it’s more like (he plays something that can’t be heard)
L: Here give me a try
He takes the headphones and plays
R isn’t convinced
R: No that’s not it (even though he can’t hear what is being played)
He sings (Figure 6.23)

Figure 6.23: Student R's third Zebra attempt

L is still playing his piece
L: I had it

He plays it again – I can’t hear it but from the look of what he is doing he is replicating a similar rhythm to what he and R discussed. This time the piece is about twice as long as that sung by each boy.

L: And then it goes (he sings the ending that he has already discussed and ‘plays’ it in the air) (Figure 6.24)

Figure 6.24: Student L's Zebra ending

R takes the headphones and has a listen
L: (playing the keyboard) Is that the right note there to start on?
R shakes his head
L: What about there? [20.08]
R: Yeah
R: You play the first bit and I'll play the second
L: Yeah, I need the headphones
L: Go press record
They swap places
R: Okay, ready… set … go
L: Hang on I'm not ready
R: Ready… set … go

L plays while R watches intently. He finishes and they rush to hear it.

Figure 6.25 is a transcription of what L played; it is the track that they used in their piece

![Figure 6.25: Transcription of Zebra final attempt](image)

There is so much that can be taken from the above interactions between these two boys. They were thoroughly engrossed in what they were doing and they were engaged in a common goal. I find it fascinating that each boy maintained his own tonality when singing; Student R used B minor/B major and Student L used (sort of) A minor and D major. Even when they sang pieces to each other they each had their own tonality. Even more fascinating is that when it was time to record the track Student L asked Student R where to start and ended up recording the piece in C, starting on G. The original piece is, in fact, in the key of B minor.

The series of Christmas pieces by Students C, K and Na presents another example of the kinds of interactions that I describe between Students L and R. It also provides an interesting insight into the collaborative process and the notion of getting it wrong.
The final composition is best analysed in terms of dissonance and that belongs in the following section. The process of composition, however, as revealed through analysis of the video and audio recordings of the session provide a fascinating insight into children’s musical perceptions and concepts. I believe that the best way of representing these processes is to present my annotated transcriptions of those events. I have added figures where appropriate to assist in understanding.

K is playing the descending phrase to ‘Joy to the World’ in the key of C Major (Figure 6.26). She plays it over and over again trying to get it right. K gets the idea that her and Student C (Na was by now operating the computer) should play the ‘Joy’ melody together. She shows C what to play only she starts on F instead of C. Accordingly, instead of playing a descending C Major scale Student C plays a descending Modern Lydian scale; 8 white notes starting on F with the interval sequence of S-T-T-S-T-T-T instead of what should have been S-T-T-S-T-T-T.

![Figure 6.26: Joy to the World in C Major](image1)

C isn’t convinced but K asks her again. This time she again starts on F (Figure 6.27) indicating that perhaps it wasn’t a mistake.

![Figure 6.27: Joy to the World in C, starting on F (Lydian mode)](image2)

There is a lot of practicing as Student C tries to learn the run. She consistently starts on F and even when she gets stuck on the two quick notes K shows her [24.37] in K’s key (C major) and Student C plays
them her own way (starting on F). She gets it ‘right’ and K nods in agreement [24.49].

They play it together and are happy
They play it over and over again blissfully unaware that it is dissonant.
Perhaps they like it. I think this is a wonderful example of hearing what they expect to hear, or hearing with different musical ears; I suspect that it is the latter.

[25.24]
C: I think we should do that one and then I’ll do that (pointing to the screen and referring to the melody that she was playing in their first version)

***Very clear example of musical decision making in collaboration***

[25.28]
In a remarkable example of tonal understanding K realises that she has in fact given Student C the wrong starting note (F) she corrects her

K: Hang on, it starts here (she demonstrates starting on C an octave lower than her own starting note)

C: It’s too deep; I need to start here (she points to B instead of F or C)

Student C is now playing a modern Lochrian mode (8 descending white notes starting on B (Figure 6.28) with the interval sequence of T-T-T-S-T-T-S, always dissonant with the C Major scale).

***Here is an indication that they are hearing what they are playing. K has realised she is wrong but C thinks that the correct way is too low, K agrees with her immediately and they get on with their playing, only this time the dissonance is even greater***
They practice the new version (K doesn’t appear to notice the difference). They finish, look at each other and agree that it is good.

[25.56]
K: Yeah
C: Ready? Set … Go
(Same counting in as in other instances)

They start recording
C gets it wrong and they laugh and do it again

They play the pattern four times properly and start a fifth but stop it after a few notes

K: Do you think only four times?

She turns to Na and tells her that they will do it four times

K: Hang on, let’s just listen to that first

They listen intently. C and K look at each other (Na is involved as well)

[26.45]
C: It’s good. We could delete that start bit (she is referring to the first track where she was playing something different)
K nods

The combined C and B notation is presented as Figure 6.29 to enable simple comparison of tonalities.

![Figure 6.29: Joy to the World as played by both students together](image)

The three versions of *Christmas* proved difficult to analyse since they sounded to me to be little more than a collection of random and dissonant melodies played using chime and bell patches. Analysis of the session recordings provided me with a very different perspective. Not only was I able to understand the piece musically (it now makes sense to me) but I was also able to gain a deep insight into the processes of composition, and into the musical understandings and priorities of these three girls.

**Dissonance**

Student R’s piece *King1* and subsequent revisions provide interesting examples of melodic and rhythmic dissonance; they are also excellent examples of melodic ‘incorrectness’. I include them in this section primarily because they are melodically driven and the melodic and tonal dissonances were apparent in the original recording. The fact that they endured four revisions is noteworthy and indicates that Student R was completely happy with what he had recorded and written. The two percussion tracks, played in by Student R during revisions and at different tempos, need to be discussed in context with the rest of the piece rather than separately in the section on rhythmic dissonance.

Student R sang and recorded into *Audacity* his own version of a children’s version of *We Three Kings*. He used the following words:

*We Three Kings like pudding and pie*
We Three Kings like pudding and pie
More a fountain
Climb a mountain
We Three Kings like pudding and pie

He sang the tune around the key of F# minor. He was unaccompanied and despite getting lost melodically in the middle section he managed to finish in the same key he started. He was happy with what he recorded and then attempted to accompany himself (after the fact) using a nylon guitar patch on the synthesiser and playing it directly into Audacity; he was using my own Yamaha W7 Synthesiser, which has tone generators and an audio out that can be plugged directly into the line in on the computer. This accompaniment is a regular repetition of the notes A and B as indicated in Figure 6.30. Harmonically this fits with his sung key of F# minor but rhythmically, despite using a dotted rhythm, its metre puts it in contrast to the vocal track. Still it is close to being ‘right’.

Figure 6.30: Bass line in Kings

The two drum tracks added by Student R are each in a different tempo. The first drum track is a kick and snare pattern at about 78bpm, the second is a rapid, train-like snare pattern that starts at about 98bpm and then gradually accelerates to about 130bpm. This happens under the constant tempo of the tune (about 67bpm)

In the final version, King4, Student R has added another melodic track. This track uses a bass sound but is played in the same range as the guitar track. Despite singing in F# Minor and playing the first guitar track in an appropriate key, he has played this track on G, A and B (if it were the 1st three notes of Kings that would put the key as E minor – quite a clash). The notes are played in ascending and descending patterns. He ends this track with a held note, which indicates a deliberate attempt to synchronise
with the vocal track. The addition of the final track followed a discussion with me, which is included below. I had listened to Student R’s piece and responded somewhat negatively to it:

I (to R): The drums don’t actually work for me. They don’t actually do anything.

[42.38]
R: Yeah they do, they make noise and that’s what my song’s all about

I: Yeah but I think you can do more than noise
R: But noise is good. But what do I do with the drums when I’ve got no other tune? (14th September)

After this interaction he set to work and recorded the final track as described above. I found his response to my comments about noise very interesting. He knew that he was making noise, rather than ‘music’, but can’t do the music, so he was happy with the noise. His question about not having another tune was genuine and showed some frustration at his lack of musical ability, yet he continued on very happily with this piece and later in the session told me that he “could listen to this all day”. At the end of the session he played King4 and proudly stated; “This is my favourite” (56.40).

The notion of hearing what is expected that I introduced earlier is supported by the example of Student R’s recording process for his King series. In my analysis of video recordings of this session I noticed that Student R was using two sets of headphones; one to hear what he was playing on the synthesiser, the other to hear what he had recorded. Each track that he recorded was played without reference to the other tracks that he had already recorded. The process of recording, after the initial vocal track had been recorded, consisted of Student R playing with sounds on the synthesiser, deciding on a sound and a melodic or rhythmic pattern, practicing it and then recording it. After each recording he would swap headphones and listen to what he had done. Most of his time was spent in finding sounds and patterns, and practicing them. His recordings were first take efforts. In his mind what he had played was right. Despite what it sounded like to me, to him it was exactly what he wanted.
Student C’s *Pink* series (also presented in Chapter 5) represent another example of melodic dissonance. The series of six compositions is entirely melodic and is built using what sounds like a beginner’s piano piece. She uses this piece as a foundation upon which she builds simple melodic patterns. In the second last version she deletes the original piece and plays a new line that (almost) duplicates the melody she uses in another track. The dissonance is caused by the rhythmic misplacement of notes and by the clashing harmonic structure with frequent Bs against Cs and Fs against Es. Figure 6.31 shows all of the parts together in the last version to include the original tune. The harmonic and rhythmic dissonance is clearly apparent.

![Figure 6.31: 4th version of Pink with all parts displayed](image)

Figure 6.32 shows the final version with the duplicated pattern in Tracks 1 and 4, Track 2 has also been changed significantly.
One fascinating example of melodic dissonance occurred not in the creating of a piece but in the background while Student A was waiting for Student N to do something. I call this dissonance but it is not really; just a very interesting example of a child playing with melody.

Student A sang quite regularly throughout the study. He is often heard in the background singing away as he works. In this example he responds to a request of mine that he include notes in the piece *The Big Bite* (discussed above). When I ask for notes, he says that they have lots of notes and points out B and C. He then plays up a C Major scale. As an afterthought he then sings ‘a, b, c, d’ using the following pitch (Figure 6.33).

From there, he then started playing and singing on his own. The following is taken from my transcription notes for 19th October:

[37.31] Student A then starts singing a whole song about the names of the notes he is just standing in front of the keyboard and singing. Much of what he
is singing sounds like ‘Twinkle, Twinkle’ but moves around a full major scale. He is singing about the key of G but is actually singing in the key of A Flat Major – remarkably close. There is a fascinating tonal relationship here. He is not thinking about what he is singing and he is working at about crotchet = 120. There are no pauses, just a steady stream of notes.

I have presented his song, with ‘words’ in Figure 6.34.

![Figure 6.34: Student A's complex melody](image)

**Representations of Children’s Compositions in the Literature**

The role of the computer in the discovery and analysis of these features cannot be underestimated. I have yet to find any reference to these ideas in the literature and I believe that this is more to do with the approach that I have taken to analysis, the idea that I am trying not to analyse in terms of adult western notions of music, than with any peculiarities of my participants. The reason why the computer is so important in the identification of these features is that the software allows analysis of the piece as it was written, rather than as an adult interprets it. The literature contains many examples of children’s musical compositions but typically these are represented through adult interpretation. Swanwick & Tillman (1986) provide carefully transcribed examples of children’s work but do so through formalised western notation. This is understandable since the children’s compositions were recorded on tape and needed to be transcribed in order to be discussed. A number of their examples (Figure 6.35, Figure 6.36 and Figure 6.37) are presented without bar lines and time signatures, and they make notes about the rhythmic or melodic vagueness of
particular pieces but the notation is regular, and does not hint at the issues that I discuss below.

Figure 6.35: Example of transcription with no bars or time signature (Swanwick & Tillman, 1986)

Figure 6.36: Bar divisions with graphic representation of glissandi (Swanwick & Tillman, 1986)

Figure 6.37: Presentation of vagueness in pitch and rhythm (Swanwick & Tillman, 1986)
Barrett (2003) takes the same approach, necessitated by the need to present children’s work that was also audio recorded. In Barrett’s case she indicates rhythmic variance by highlighting tempo changes (Figure 6.38) but the works are all represented with bars and regular beats. I have done the same thing when presenting transcriptions of some pieces in this chapter and in Chapter 5, and when discussing compositional complexity in earlier work (Reynolds, 2002), although even then I made note of the lack of acknowledgement of the first beat in the bar.

![Figure 6.38](image)

**Figure 6.38: Accelerando used to indicate rhythmic variance (Barrett, 2003)**

Burnard (2000) presents drawings made by children about their improvisations. While these images might be used as graphic scores they were made after the fact, not as compositional or improvisational guides (Figure 6.39). They serve to show the reflective process of children after improvisation; not as a way of representing what was played or what could be played.

![Figure 6.39](image)

**Figure 6.39: Reflective drawing of composition (Burnard, 2000)**
Nilsson’s (2003) examples (Figure 6.40) come directly from *Cubase Score*, a midi sequencer and notation program, yet there is no discussion about rhythmic dissonance and all examples are presented in strict four/four timing with perfectly placed notation; an indication that either the files were ‘quantized’ (a process in midi sequencers wherein note lengths and starting positions are moved in order to create regular beat and rhythm) or the notation representation was made at a quaver or semi quaver resolution (midi notation programs allow for notes to appear to have been ‘quantized’ without actually changing the played values).

![Figure 6.40: Regular rhythmic representation in Nilsson (2003)](image)

Jennings (2005) presented one ten year old child’s work that was composed with the specially designed children’s compositional software, *Hyperscore*. He represents the child’s work as screenshots from the software. These screenshots show ‘blobs’ of sound that are placed along a ruler, these ‘blobs’ can be arranged vertically and horizontally. The first of Jennings’s examples (Figure 6.41) clearly show rhythmic variance and a lack of meter.

![Figure 6.41: Irregular timing using Hyperscore (Jennings, 2005)](image)

In I have drawn lines across the score in Figure 6.42 to highlight where the beat should fall
Interestingly, Jennings’s subsequent examples are those of compositions made after teacher intervention “designed to encourage Kevin (student’s name) to move beyond the superficial exploration of the interface and reframe the task in a musical context” (p. 232). These examples show perfectly lined up regular four bar patterns (Figure 6.43 is one of those examples). The inference from Jennings is that the initial compositional example was somehow ‘wrong’ and that teacher intervention was required to ‘fix it’. In Jennings’s study he worked with two students at a time in a designated classroom, through such an arrangement he was able to work very closely with each student during the fifty minute compositional process.

Kratus (1989, 2001) does not present any examples of children’s work. In his earlier work he presents graphs to represent the amount of time children took on what he describes as “the three main compositional processes … exploration, development and repetition” (1994b, p. 131). It is perhaps not appropriate to include Kratus in this section but I do for two reasons; first, he does not provide any examples of children’s compositions when discussing them, and I believe that absence or omission to be noteworthy, and second, Wilson & Wales (1995) draw so heavily on the work of Kratus in their study.
Wilson & Wales (1995) do provide examples of children’s compositions in their investigation of the complexity of children’s compositions through the focus on melodic and rhythmic stages of development. Their study used the early musical notation software, *Music Works*. In this application notes are placed onto a stave using the mouse. Note values are presented in a palette and range from semi breve (whole note) to semi quaver (sixteenth note), notes must be selected from the palette and dropped onto the stave to represent pitch and rhythm. In order to change note duration a new note must be selected. The stave allows for up to four parts to be composed. The program does not allow out of time note arrangement as only the correct number of beats (either notes or rests) can be placed in any one bar. Two examples are included as Figure 6.44 and Figure 6.45. Accordingly, the examples they use, while interesting in terms of the somewhat random nature of both melody and rhythm, are all in perfect four/four time and contain no evidence of rhythmic dissonance or any acknowledgement that had the environment been different this feature might have been apparent.

![Figure 6.44: Melodic composition of a Grade 2 child (Wilson & Wales, 1995)](image1)

![Figure 6.45: Melodic composition of a Grade 4 child (Wilson & Wales, 1995)](image2)
Based on my readings and my own experience, it is my belief that researchers of children’s musical compositions work around notions of melodic and harmonic structure. Typically children’s works are presented in a way that demonstrates skill, or lack of it, in melodic development, sequencing, awareness of harmony and rhythmic structure. Through my analysis I have come to a conclusion that for many researchers either assumptions are made about children’s understandings of these features or the way the data was collected or analysed did not allow for these features to be fully investigated without adult intervention. This might sound like a criticism of previous research; for the most part it is most certainly not. I maintain that the work of Swanwick, Swanwick and Tillman, Folkestad, Nilsson, and Barrett to name a few, are of significant importance; their focus and analysis is just different from mine and so the way they discuss children’s compositions is different. I highlight them here in order to draw attention to the difference and because of their importance within the literature and to my own approaches to music education and to this study. The criticism I do have is for the work of Kratus. I find it difficult to see how his experiments were little more than a test of memory.

Summary

The features presented in this chapter are representative of consistently reoccurring compositional features. They represent the very different ways the children in the study engaged with the conventional musical elements of rhythm and pitch. They also represent a new way of presenting children’s electronic compositions that have been analysed using the software in which they were created. I have mentioned earlier in this work the difficulty of representing descriptive and graphical representations of children’s music making. With some of these compositions a graphical representation is a more accurate representation than a sound file would be; given the visual nature of the process. Given that I am compelled to present these compositions in the current format (and that realistically I will continue to do so in publications that follow) I have tried to do justice to the compositions and the compositional features that are so important to this study. The works presented in this chapter are not the anomalous examples of remarkable things carefully selected to make a point. These works are typical of the music that these children produced. I could have selected any of the 261 compositional files for inclusion in this chapter and I could have presented remarkable
insights into the compositional process and the ways in which these children demonstrate their understanding (or disregard for it) of conventions of rhythm, melody, harmony or any musical element.

I conclude this work in the following chapter where I attempt to tie together the threads of the narrative and attribute some meaning to my understanding of the events that I have presented so far.
Chapter 7

Conclusion

But to abandon a shared category of the child is to confront a daunting paradox. If as adults we do just that, what happens to the concept of ‘childhood’ through which we, as adults, see ourselves and our society’s past and future? If … the concept of ‘childhood’ serves to articulate not just the experience and status of the young within modern society but also the projections, aspirations, longings and altruism contained within the adult experience then to abandon such a conception is to erase our final point of stability and attachment to the social bond (Jenks, 2005, p. 134).

Throughout this work I have presented a view of children and children’s musical creations that attempts to look at children and the world of childhood from the child’s perspective: A view that requires the observer to acknowledge the difference of this perspective. I argue that by looking with adult eyes it is only possible to see part of the picture. I do not for a moment believe that it is possible for an adult to see the world through a child’s eyes but the acknowledgement that such a view exists is crucial. I have used musical composition and the electronic environment as my lens; I believe that it could just have easily been art or science, or writing, or any other lens. I have through the use of music, however, identified things that I had never dreamed of and have never seen in the literature that surrounds the music making of children.

Music is mysterious. It is mysterious to musicians who understand its beauty, power and complexity; it is mysterious to listeners who are aware of what it does to them, perhaps without understanding how or why it does it. It is also mysterious to many parents, many educators, and many educational administrators and policy makers. It is little wonder that we ignore it in curricula, and have such difficulty in teaching it to children, and in understanding its place in the lives of children.

How many parents, teachers or ministers of education actually expect a child to become a musician? I don’t know the answer but I suspect that there are very few, yet we seem to want to teach them to compose and notate as if that is the path they have already chosen.
I understand many of the mysteries of music; Beethoven, Bach and Mozart are magnificent mysteries, to play them can be transcendental; to listen to them spiritual. Contemporary artists like Sting can use words, melody and rhythm in ways that defy understandings of common (and not so common) time, and certainly our understandings of rock. Miles Davis’s approach to music and music making was mysterious each time he created a new iteration of it, and remains mysterious today, but still remarkably popular. This thesis is not about Beethoven, Bach or Mozart, it is not about Sting or Miles Davis, or any adult composer. This thesis is about the mysterious music of children and childhood, and what those mysteries mean to us as educators and adults; what they can tell us and what we can learn about children and childhood.

Eisner (2001) talks about the justifications made about the teaching of music education. He describes how music educators try to justify it by making connections to how it makes children better at other disciplines. His main point is not that we should show how well music suits everything else we do but how it is so essentially different from everything else we teach. He says, “What we must search for are the justifications built upon what is distinctive – indeed, even unique – about music as a form of human expression” (2001, p. 20). It is this uniqueness that is presented in this study.

In developing this study and as a result of years of teaching music to children, and as an outcome of previous work (Reynolds, 2001, 2002, 2003) I began asking myself questions about the way we teach music in primary schools and why we teach it that way. I looked at the way we teach art and it occurred to me that even though there is so much in common between the two disciplines, we teach music very differently to the way we teach art. Questions arose:

- Why do we teach music in schools?
- How do we teach music in schools?
- Why do we teach art in schools?
- How do we teach art in schools?

The same questions could be asked about English, maths, science and so on.
I then asked myself if these questions correlate. I don’t think they do. I also asked myself another question: Does any parent who is not an artist actually expect or want their child to become an artist? I doubt it, I also doubt that many parents expect or want their child to become a musician. Yet we approach children’s music making very differently to the way we approach their art. Yes, we know that the head is too big or the perspective is wrong, but that doesn’t matter; we proudly exhibit our children’s art work on our kitchen walls, at work, on our fridges, or we even have them framed as mementoes of childhood. We do similar things with their poems or stories but we do it rarely with their maths work; how many parents proudly display their child’s ‘sums’? We do it even more rarely with our children’s music making endeavours.

There is something about music. True it is hard to display a child’s composition unless it is a graphical representation. They often don’t sound very ‘good’. You actually have to listen to it, to engage at a different spiritual, aesthetic or cognitive level than with a drawing. Yet we still judge children’s music making against very different criteria than we judge their art; we judge as we think it should sound, not for what it is.

Many parents (many people) wish they could play an instrument, or wish that they ‘knew’ about music. Why? I wonder if there is in all of us, regardless of culture or background, an inherent desire to communicate, be it spiritually, popularly or even perfectly. Music has so much significance in so many cultures, its place in our daily lives and in our history is pervasive and unarguable. For many people, especially young people, it defines their life and their identity. For others it guides and directs. It praises God and unites sports fans. It is a battle cry and parade. It is an expression of love and an expression of loss. It can define decades, movements and cultures. It can generate billions of dollars. The list could go on. Yet for many reasons we devote very little time to it in schools, we allocate very few resources and we continually fail to understand it educationally. There is something about music.

This thesis is about music yet it is not about music. It uses music and the making of music to analyse, investigate and describe childhood, and children’s relationships with their environment. It investigates and analyses their musical compositions, often using
the same methods of analysis that it criticises. It describes the interactions children
had with music, with computers, with their world, with each other and with me. Of
significant importance is the way it presents the compositions of the participants and
what those compositions mean to us as researchers and educators. It seeks and
presents new ways of investigating, representing and analysing children’s musical
compositions, and in doing so asks educators to look differently at the way children
make music and how they interact with their environment, in particular the electronic
environment. It describes the process of composition and the compositions
themselves, and presents a new view of children’s musical perception and priority.
Because of all that, and through it, it seeks to apply an understanding of children and
childhood.

The delight and the dilemma of this study and this dissertation is that it was a journey
into, an exploration of and an engagement with the unknown. So much of what
occurred throughout the study was entirely in the hands of the children. At points
within the dissertation I describe the failure of my lame attempts at stimulus or
inspiration (so much of the music research literature is full of similar attempts (not
always lame though) to direct, guide or facilitate composition). My lame attempts
were tolerated at best, derided at worst (or should it be the other way around) or just
ignored, but always in the nicest possible ways. These children were empowered to do
what they liked or what they could.

The dilemma (and perhaps the delight of the brave or foolhardy researcher) is that
nothing in the literature, and there is much of it, came close to approaching children’s
compositions in the same way that I did. This is not the boast of a novice; much of
what I have read resonates with my developing views. Much is written by people
whom I hold in the highest regard and could not begin to criticise. The difference is in
the approach to music. I, too, am guilty of the crime of applying a traditional western
analysis of musical form and structure, and I talk about melody and rhythm using all
the required musical language. I have done so for a number of reasons (to demonstrate
my credentials not least among them). Most importantly though, I have done it to
attempt to demonstrate that accepted beliefs about what is important in children’s
music making, about the way we perceive, understand, assess and celebrate children’s
musical composition require a considerable rethink that is long overdue.
The significance of this work is this approach to children’s composition and its acknowledgement of the environment in which it was created. In my career as a music educator I have tried not to be bound by laws of theory and form, choosing rather to let children find the need to learn about notation, harmony, melodic and rhythmic structure through their compositional explorations. I have never really been concerned about correctness of sound, choosing process over product and experience (in the Deweyan sense) over instruction. In an earlier study (Reynolds, 2001) I started developing suspicions about children’s musical perceptions and about their apparent lack of concern about tonality and rhythmic structure. But these areas were beyond the scope of that study and I was left to wonder. In this study, my research design included the environment as a key component. It is through the study of the interactions with the environment and through the use of the environment itself as a data collection tool and an analysis tool (Reynolds, 2005) that my suspicions were able to be confirmed. What this study presents is an approach to the representation and analysis of children’s compositions that is very different from those represented in the literature. Through the use of the ICT environment I was able to investigate the compositions within the environment they were created. To deconstruct and reconstruct each piece using the same tools as the child who composed it used. I was able to watch the process of composition repeatedly and to investigate it and reinvestigate it as an individual event, as a series of events and as action within its environment.

**Composition Compared to Writing**

In John Katzenbach’s novel, *The Madman’s Tale* (2004) the protagonist, one time mental hospital patient Francis Petrel, refers to children’s writing as “that wondrously crazy script that children have before we burden them with reason and opinions” (p. 8). This understanding of children’s writing, spoken through the mouth of an innocent and somewhat eccentric character, resonates perfectly with the understanding I seek, the interpretation I propose, of what the musical offerings of the children in this study represent. Their offerings are indeed “wondrously crazy”. Musically they are unburdened, perhaps in the ways that great jazz composers and performers have tried
to recreate. Miles Davis’s constant search for freedom of restriction from formula, Ornette Coleman’s attempts to unshackle the art, even to the point of playing a plastic saxophone! Coleman used multiple bass players and multiple drummers; the children in my study did the same thing. Not only did they use multiple drums and basses, they did it without regard for adult convention. They are unburdened from form and function, from considerations of theory and harmony, and of the restrictions of rhythmic regularity. What secret insight into children did Coleman possess? Their compositions are crazy and colourfully unburdened in the way of artists like Klee. They are not childlike in the way we choose to refer to the utterings and productions of children; they are the child. Swanwick (1988) refers to the child’s celebration of sound and music as a “state of childhood grace” (p. 56) and notes, as I have done, that some Twentieth Century composers have sought to return to that state of grace in their own compositional practices. It is this grace, although not always graceful, that is presented in this thesis. It is this grace that should be celebrated, acknowledged and, hopefully, understood.

The environment in which these children worked has helped them to be wondrously crazy. The software and the synthesisers provide wonderful play tools for them but the environment is more than just software and hardware. The environment is everything the children perceive about the electronic world and the physical world of the study itself. Despite my best efforts to “burden them with reason and opinion” they remained unburdened. I wonder how hard I really tried to impose restrictions and insist on form. The strength of their need to play and the joy they exhibited time and time again interacting with each other and their environment overwhelmed me and I could not persist with restriction.

So like Francis Petrel I sit in wonder of the offerings of these children and I marvel at their achievements.

Anomalies and Development
It is difficult as a researcher to focus on anomaly, when these could be seen as unrepresentative of what was actually happening for the most part in a study. As a qualitative researcher, however, this should never be the consideration; the anomalies and enigmas are as much a part of the research as the regularities. It is the anomalies that Bamberger (2006) talks about as she seeks to redefine her earlier work on children and their musical development. She confesses to concentrating on regularities rather than the “anomalies and enigmas that are often more telling with respect to development” (p. 70). She blames this error on the “influence of cognitive developmental theory” (p. 70).

She asks many questions about the way we analyse music and musical offerings and relate them to notions of musical development. In particular she is interested in knowing how we are influenced by our own implicit assumptions about music and how that affects our analysis when confronted with unexpected (and expected) musical experiences. For me this resonates with the ways music researchers have presented children’s compositions in the past. We have a terrible habit of ‘correcting’ these compositions, removing the unexpected, so that they conform to our own expectations, and so that we can actually (and ‘accurately’) represent them for discussion and analysis. In doing so, however, we change that which is the child and that which belongs to the child; we ‘adult’-erate their music.

Bamberger questions music educators’ and researchers’ approaches to children’s music and reminds us “that, within our culture of knowledgeable musicians, we may sometimes be impoverishing our more educated hearings” (p. 88). Thus, it is important for us to listen carefully to what children are doing and to be careful that we are actually hearing. I believe that my study presents the voice of the child and that we are duty bound to listen to it.

Despite my repeated returns to musical development, in particular the Swanwick and Tillman sequence of musical development, this study is not about formalising developmental stages. The developmental aspects of the study and the research question are to do with what we can learn about musical development by broadening our understanding of children’s musical perceptions and understandings. Bamberger’s chapter is in a book about musical development, it has development in its title. In a
similar vein to the way she questions our approaches to hearing children’s music, she
questions our approaches to development and its interpretation.

Learning and knowledge about music, can take different forms, be put to different uses, result
in different hearings, and can be seen as evidence of developmental progress or not depending
on the theories to which you ascribe and the cultures to which you belong (p. 88).

In my study, the anomalies are the regularities. This presents its own methodological
problems since those anomalies are very much my focus. The fact that they are
regularities within my study is interesting but the fact that these regularities are
actually anomalous to much (if not all) of what has been reported in the literature is
astounding.

This study started with an intention of applying the Swanwick and Tillman (1986)
sequence of development to children in the age of computers, and possibly realigning
our understandings of how those stages may or may not be relevant. Of course my
direction changed and the focus on development shifted, but the Swanwick and
Tillman study still has resonance to me as a researcher and educator. It is appropriate
to revisit that study within the context of Swanwick’s (2008) own revisitation. The
following section applies what Swanwick said in that revisiting to this study.

**Sequence of Musical Development Revisited**

Swanwick defends the Swanwick and Tillman sequence of musical development, not
in the sense of its rightness or wrongness but in the ways it has been interpreted. He is
concerned that, according to him, Piaget and all things Piagetian are seen as too rigid
in their developmental approach. He describes the stages as being presented from the
outset as “both cumulative and recursive” (p. 228). The Swanwick and Tillman
sequence was never presented as one step that follows the next but as a spiral in which
the stages interact with each other and children display different components
depending on the task and situation. He then proposes eight cumulative
developmental layers that “are wholly positive and can be applied to composing,
performing and audience-listening settings. It is quite a useful exercise when trying to
make an evaluation of student work to see how far along this sequence it is possible to
get (p. 228)” . I present those layers here:
Layer 1 People enjoy/explore sounds
(and)
Layer 2 they classify/control sounds
(and)
Layer 3 they identify/produce expressive shapes, mood/atmosphere
(and)
Layer 4 they identify/produce expressive shapes within common musical conventions
(and)
Layer 5 they perceive/produce expressive shapes in transformed or contrasting or surprising relationships
(and)
Layer 6 they locate structural relationships within specific idioms or styles
(and)
Layer 7 their musical perception/production shows strong personal identification and commitment
(and)
Layer 8 they relate to music with sustained, original and involved independence (p. 229).

He makes the valid point (one that is also made by Langer (1969) and before her Dewey (1938)) about the ways in which new theories can be “very unsettling when we already have alternative explanations” (p. 228). He is concerned that the Swanwick and Tillman sequence has been seen as one approach that is exclusive or in competition to other approaches:

The 1986 theory can be seen as complementary to and not in competition with ethnographic studies of composing or improvising which attempt to ‘situate’ the process rather than look for general developmental patterns (Barrett, 2002; Burnard, 2000, 2007). Even within the limitations on generalising from particular cases, such studies provide valuable insights into the processes of learning and there is much to be learned about the details of developmental processes. However, observing, describing and interviewing children making music in specific locations does not invalidate the overall theory. It seems important also not only to understand something of how students learn and respond to music but also to address the epistemological issue of what is being learned, the quality of the transaction. Both aspects are involved in the processes of musical development. (p.230)

The nature of my study and the affordances of the electronic environment make it difficult to apply these layers, but not impossible. This is especially relevant when
Swanwick says that the cultural environment and the development of individuals should not be considered in isolation. For the sake of argument, and bearing in mind that the Swanwick and Tillman sequence of musical development had a significant bearing on my reasons for undertaking this research, I will take Swanwick’s advice and apply the children’s work in my study to his layered approach.

The first three layers are easily achieved; whether achievement is the correct measure. All of the children enjoyed and explored sounds (Layer 1), and they classified (through the use of the software and in their interactions) and controlled sound (Layer 2); even if that control didn’t always sound like control. They identified and produced expressive shapes (sometimes by drawing them as pictures) and they created mood and atmosphere (Layer 3). Layer 4 is where the connection becomes difficult. Whether or not this layer is achieved in my study is dependent on the definition of ‘common musical conventions’. The conventions of melody and rhythm were present but they were present in ways that defy common musical analysis. The notion of convention can also be interpreted as idiom (Layer 6); the conventions of rock and roll require a guitar, a bass and drums. These were present in many of the compositions but their use is unconventional.

I have no hesitation in connecting many of the compositions to Layer 5 since most of what was produced involved the expressive shapes (even if at times those shapes were visual) being transformed and being very surprising. I have dealt with Layer 6 above but note the importance of idiom (genre) to the children. Of course there is plenty of room for debate about the structural relationships that were located within those idioms or styles. There is no doubt that personal identification (Layer 7) is present in many of these works. This personal identification is dealt with in detail in Chapter 4 in the individual stories. Specific compositional approaches and styles were favoured by each child and collaboration of children. The notion of commitment is harder to identify but I argue that by the very nature of the existence of personal identification there needs to be a commitment to that approach or style for it to become apparent. For example, Student N was certainly committed to rock, Student R to fun and Student K to sound.
I struggle with Layer 8 and cannot hope to make generalised connections to this layer as I have done with the brief descriptions above, as the notion of how the children relate to music and the nature of the originality and independence of that relationship is not something that I investigated specifically. I can, however, make assumptions about individual children. Student L’s approach demonstrates to me an independence of thinking about music that I did not notice until late in the analysis process. The quirkiness (perhaps serendipity) of many of his compositions indicates that even in his play he could identify approaches to sound that demonstrate independent thinking. Similarly, Student K also demonstrated an independence of thought and approach. From very early on she was interested in the relationships of the sound of the environment to the sounds of her own work. She was absorbed and engaged with the idea of John Cage’s 4\textquoteleft\textquoteleft33 and wanted to record her own version. Is this original and independent? I think it is. Especially since, in my own experience and speaking anecdotally, when I raise the idea of Cage’s work with students or adults the immediate perception is that it is a fraud, a joke, a work about nothing, or a work of silence. Student K saw straight away that it wasn’t about silence it was about what filled the silence; I believe this to be an original and independent approach.

Of course, the key word in Swanwick’s Layer 8 is ‘sustained’ and I cannot present evidence of that. I can argue, however, that at times it was sustained – for the duration of a composition.

My purposes in attempting to apply the children’s work to these layers are manifold. First, when I commenced this study I wanted to show, based on my earlier research, that electronic environments enabled children to work at stages higher than where they should be developmentally. This higher level did not need to be sustained but it would be there. I believed that by demonstrating this I could argue that the spiral could be flattened; that in effect children could be working at many levels at once. These assumptions became unnecessary and irrelevant to my work. I did not seek nor see such evidence.

Second, as I progressed with my reading and my research I believed (and in many ways still do) that the sequence of musical development was not relevant when applied to children working in electronic environments. I also believed that what I
saw as the Piagetian approach to fixed stages was not appropriate, that Vygotsky held the answer with his zones of proximal development (Reynolds 2005).

Finally, I struggled to see the value or importance of applying stages of musical development that are firmly entrenched in adult perceptions about musical correctness and built on analyses that reconstructed children’s work to suit those perceptions.

Upon reading Swanwick’s later discussion about the sequence of development and his recommendation that the layers be applied to any musical evaluation my thinking has changed somewhat. His idea that his work is not in competition with ethnographic studies resonates. I struggle with the need to identify a sequence of development and the stages within it, and I struggle with the applicability of developmental stages in the context of the current music curriculum as applied in primary schools in Victoria, Australia.

**Revisiting Kratus**

In his investigations of children’s creative processes, Kratus (1994a) attempted to quantify children’s audiation (the ability to hear the music without it being played) processes in order to correlate their practices to those of adult composers. His desire to make this correlation appears to lie in the belief that musical researchers have been looking in the wrong place and that if it is searched for, then the connections can be made. He says that “the apparent conflict between the empirical research with children and the reports of composers may be related to the way musical creativity is conceived of and measured in the research” (p. 116). In order to discover this missing link between the practices of children and the practices of adult practitioner composers, Kratus tested the ability of children to compose a piece of music on a synthesiser, while sitting in a room facing a clock. They were given strict instructions, were not allowed to play with the instrument or see the computer screen it was connected to. They could only start on middle C and they had ten minutes in which to compose. They then had to play what they had composed back to the researcher. (I have discussed this approach in Chapter 2). Through a process of analysis in which four judges listened to the pieces identifying process and product, links were drawn that allowed the researcher to make the connections that he sought; children and adult
practitioner composers did in fact operate in the same way. Developed audiation techniques correlated to better musical compositions.

Much of our contemporary music education research and understanding is drawn from the abovementioned study by Kratus and earlier versions discussed in Chapter 2. Kratus’s own definition of composition is at odds with the current study and at odds with my own personal experience as a composer. He defines composition as something that is closed; in order for it to be closed it must be able to be replicated. He says that “if one cannot replicate an original melody … there is no closure, and the music does not exist as a composed product” (Kratus, 1989, p. 8).

As a researcher who has experienced children working in the ways that I have presented in this thesis, this legacy leaves me terrified. Why do we need to know if children behave in similar ways (I’m not convinced that this was actually demonstrated anyway) to professional adult composers? What does it tell us about children and about the way they perceive and understand music? The notion that adult composers would subject themselves to such limitations is laughable and to attempt to correlate these two actions is mystifying.

The current study is about children being children. It is about the way the play and explore, the way they interact with their environment and with each other. It is about the ways in which they perceive music, computers and the world. It is about their musical understanding. The study has shown me, and I hope the reader, that children are children. The music they make is their music, their play. They are not adults, their compositions or compositional processes should not be compared to adults. This study has shown me that these particular children at this particular time didn’t care, or weren’t bound by notion of tempo, time or beat. The melodies they played were the melodies they thought they played. The cacophony of rhythmic and tonal dissonance that featured so strongly in so many of their compositions was wonderful music; “wondrously crazy” to borrow again from Katzenbach’s (2004) character, Francis Petrel.

Ours is not to stultify the experience of childhood, nor is to quantify the meaningless and artificial dabbling of children in closed, white rooms (I don’t know if Kratus’s
room was white, but it appears white in my mind). It is certainly not our role or our duty to try to represent children as adults, or to attempt to understand them from adult perspectives. Ours is to celebrate the playful, the crazy, noisy, funny and remarkable languages of childhood, and to learn from it.

**Lived Experience**

When providing an insight into phenomenological research, Burnard (2007) talks about the lived experience. Interestingly, she equates the types of ‘lived experiences’ to creative musical activities. Her list of “children’s individual ways of experiencing *lived time* (p. 1201 original emphasis) follows:

- *lived time* (as experiencing “immediacy” when improvising compared to “recursion” when composing);
- *lived space* (as experiencing “shared” space when improvising compared to “owned” space when composing);
- *lived body* (as experiencing “continuity” when improvising compared to “reflection” when composing);
- *lived relations* (as experiencing “interaction” when improvising compared to “formation” when composing) (p. 1201 original emphasis and quotation marks).

These experiences are phenomenologically arrived at, through a research perspective that is interested in investigating unique individual experience. In terms of my own study (which has some phenomenological basis), the separation and dichotomy (or perhaps the duality) of improvisation and composition seems to disappear. The children’s experience is frequently immediate and recursive at the same time, just as it is shared and owned, continuous and reflective, and interactive and formed. Whether this is due to the electronic environment or to the approach of the children (and in the context of a study that is so strongly focused on the affordances of the environment it has to be concluded that both are the reason) is of less consequence than the actuality of the event. The interpretation of these events that suggests a blurring of the points of difference between composing and improvising is a result of my own phenomenological and ontological understanding of the unique individual experiences of the children in my study.
Of significant importance to my study are Burnard’s concerns about “whether adult norms and expectations provide a relevant framework to fully understand children’s creative music practices. There are limitations associated with describing children’s creative processes without knowing the basis of their musical intentions” (p. 1207). For Burnard this understanding of intention is paramount. My study does not seek to understand the participants’ creative processes; rather it seeks to describe their compositional processes. Through that description it provides a framework for developing understandings about children’s musical perceptions and their musical understandings. Their intentions were not something I investigated but significantly, the framework I present for the understanding of process, perception and understanding is built from the perspective of the child, not on adult norms and expectations.

There are similarities in Burnard’s ideas about lived experience to Eisner’s ideas of ‘rightness of fit’. He says that:

“… learning to think musically means learning how to experience felt thought. It requires learning to experience qualitative relationships – in the case of music, patterned sound – over time. The sense of “rightness of fit” that one experiences in musical relationships, as in the relationships in the other arts, depends on the somatic knowledge, a form of body-situated knowing that cannot be reduced to recipe or algorithm” (Eisner, 2001, p. 20).

This also fits with the idea of music as experience (Langer, 1969). I like the idea of rightness of fit as an explanation or description of the ability to make judgements about their own or each other’s works. Somatic knowledge is ‘bodily knowledge’ or as Eisner says “a form of body-situated knowing” (p. 20).

It can be argued, then, that the ‘rightness of fit’ that Eisner describes was what my participants were experiencing at times throughout the project, regardless of what it sounded like to me. The rightness of the wrong notes in Smoke and in Rugrats; the rightness of multilayered drum tracks that didn’t synchronise; the rightness of the Gamelan sound; the rightness of the lead guitar track that was sung, and amongst other things, the rightness of clumps and clusters of unrelated sound. It can be further argued that this rightness belonged to the musical relationships that were developed
purely through the act of composing or even engaging in being there when another child composed.

**Meaning and Its Interpretation**

Throughout this study I use the term ‘composition’. I expect the reader to have an understanding of that term and possibly an understanding of many of the definitions applied to it. I do not provide a definition for that term in this work; I expect that the compositions themselves and the words I have used to describe them are adequate definitions. It occurred to me very early on in my work that the children didn’t know what I was talking about and so had to create their own understanding. In a compelling discussion about language and meaning Heron says that “…in principle agreement about the rules of language cannot ultimately be mediated by language. We cannot use words to agree about the use of *all* words: this is logically impossible” (Heron, 1981, pp. 24-25). This notion of meaning and interpretation through the metaphor of language was succinctly phrased by Moore in his work, *Principa Ethica* (1903):

“My point is that ‘good’ is a simple notion, just as ‘yellow’ is a simple notion; that, just as you cannot, by any manner of means, explain to anyone who doesn’t already know it, what yellow is, so you cannot explain what good is” (Moore in Moustakas, 1981, p. 210).

Was it possible or even reasonable to ask children what composition was or to ask them to understand it if they didn’t already know what it was? Was it reasonable to ask them or expect them to compose? They knew about songs and they knew that people wrote them (I think) but there had not been any attempt to actually articulate either verbally or mentally what composition was. How then could they do it? When I asked these children about composing they didn’t know what I was talking about. Even when I reminded them of the work we had done in my composition based music class two years ago. They nodded and tried to please me with their answers; their responses have been detailed in Chapter 4.

What sense have children made of previous researchers’ requests? How could Kratus’s child participants compose if they didn’t know what they were being asked
to do? How could evidence based decisions be made about those products? What possible understanding was he trying to achieve? Did he actually ‘prove’ anything more than the idea (or is it ‘fact’) that older children were better at remembering their own invented patterns than younger children?

I wonder how many researchers have asked that question of the children they have studied. I can’t recall it appearing in the literature anywhere. Even those, myself included in my earlier study, who have gone to the trouble of defining composition for the purposes of their studies. Those who have defined it have not shared those definitions (or at least the basis or meaning of those definitions) with their subjects. At a different level, still using Moore, how can I explain to you, my reader, what these children composed without you already understanding it?

Music educators and adults ‘understand’ what music is and they understand what composition is (even if they don’t understand the process). They also understand what children’s compositions often sound like. The last understanding is usually determined by the rules that we apply to children before they start composing; the instruments we make available to them, the particular educational purpose surrounding that composition, the length, the melodic and rhythmic structure or any other number of impositions and conditions we care to apply. The result is, in many ways, predetermined by those conditions and our expectations. Our understanding is reinforced and validated.

I am not saying that I am not guilty of doing all of the things I so callously accuse music educators of, I do; the proof is in the narrative of this study, it is in the data. What is different in this case is that despite my best efforts at being an adult the environment was stronger than me, and I acknowledged it. All the rules were broken by that environment and by the child/computer relationship. On top of that, through the shared experience and the sustained relationship with the participants I shifted my rule making and often only provided the restrictions as starting points, happy to see them disregarded. Even more importantly, I used that environment to analyse and perceive from the composer’s (the child’s) perspective.
The notion that all language is metaphor is raised elsewhere in this work but I return to it now. When discussing children’s mental development, Bateson (1972) talks about the ‘Tree of Knowledge’, which to him, is when children understand that “their signals are signals” (p. 179). Thus, as this development is applied to language, when children understand that language is metaphor they show development. I don’t argue with this idea. My point is that in childhood, play is already a well accepted and well understood vehicle for metaphor; play is metaphor and children know this. They don’t need to explain that the piece of paper they are playing with represents a plane, or a car or a ghost; it is the plane, or the car or the ghost, and it can change into any of those (or anything else) at will. This world of symbolic representation is a world in which children live very comfortably. It can follow that their musical play is something that they understand just as well. Their compositions aren’t play compositions, they don’t represent what compositions should sound like; they are all of those things and none of them at the same time, and they are anything else they wish them to be at any time. Not representations of them but metaphors for them in the same sense that the piece of paper is the plane.

While children might not appreciate the adult significance of signal or of metaphor they are comfortable using their music as symbols. They don’t necessarily have the maturity to articulate that language is metaphor but they can use musical play to ‘be’ the things that they think they should be.

For Bateson, once the fruit of the Tree of Knowledge has been eaten, “not only the characteristically human invention of language can then follow, but also the complexities of empathy, identification, projection, and so on” (1972, p. 179). This idea of Bateson’s cumulates in his belief in the existence of “paradoxes of abstraction” that are essential to “the evolution of communication” (p. 193). An acceptance of this approach; that things do not always have to be what they appear to be can easily be applied to the compositions (and through them the communications) of the children in the present study. The paradoxes that the children created, the wrongness and rightness of their melodies and rhythms, the music that they ‘painted’, the bands that they created are representations of play and communication through metaphor without an articulation of (or any need for an articulation of) understanding that metaphor exists.
In his search for a Child’s Theory of Mind, Wellman (1990) takes the position that the world of childhood might be very different from that of adulthood and that “children’s understandings might be different from our own”. He seeks to understand the perceptions of childhood through what he says, is akin to a cultural anthropological approach in that his aim is “to seek a worldview that might prove different from our own” (p. 2). To do this he needs to be informed by children. My research seeks very similar things and is, accordingly, informed by children through my interpretations of their actions, interactions and musical compositions. The analysis of which requires a perspective that is very different from adult Western notions of appropriate use of pitch, rhythm and melody.

Returning to play and its centrality to the current study, Daiute (1989) argues that “play is a form of thought for children” (p. 2). She believes that approaches to the teaching of writing skills based on what Bruner refers to as the “novice-to-expert regime” (1985 in Daiute) do not do enough. This model of instruction, which is based on an understanding of the ways in which competent adult writers plan and revise, and attempts to develop these skills in children, ignores the world of childhood and the things that children see as relevant and important. The approaches that, according to Daiute, impose adult values and focus on the distance children have to travel before they can become skilled writers are “adult-oriented approaches [that] do not draw enough on children’s strengths” (p. 4). The strengths that she refers to are the ways in which children see and interact with their world and are mediated through play. Daiute would like to see the novice/expert contrast investigated. Why do children reject it? She would like to see research that describes “the many ways of being neither an expert nor a novice” (p. 4).

This idea fits very closely with the approach that I have taken in the current study. Much music education is built around this novice-to-expert approach (as is much education in general). Compositional research, as described earlier in this work, has looked at the ways in which expert composers practice and has encouraged educators to teach these strategies to children. Wallas’s (1926) compositional processes of preparation, incubation, illumination and verification, and Kratus’s “exploration, development and repetition” (1994b, p. 131) are but two examples; they are, however,
two significantly important ones. These examples come from an approach to the research into children’s compositional practice that seeks to identify these features in what children do. What is identified, typically, are the significant gaps between child skill and adult skill. Not because children can’t compose but because children don’t compose in the ways that fit the investigation. This kind of research seeks a sameness of approach in order to discover development and serves to highlight the novice/expert gap. It does not do what Daiute wants, which is to find and describe those ways of being neither expert nor novice. Nor does it allow for the investigation of children’s ways of being and of the strengths of their approaches. Of course it also fails to consider the importance of the role of play.

It is my belief that the current study presents children’s compositions and compositional processes in a way that is significantly different from previous research and that it does the things that are so important to Daiute. Her notion of play as thought is supported throughout and accords with my ideas of play as metaphor, metaphor that children understand and work within.

**Conclusion**

The current study has presented children’s compositions in way that differs from most if not all the literature that I have read. Quite obviously the technology has enabled that to happen but there are two other reasons that are highly significant. It may well be that these reasons are themselves affordances of the electronic environment and that in my relationship with that environment I perceived something that was very different. The first of the two reasons is the centrality of play. The compositions are represented here as coming from and being part of a play. The second of these reasons is quite possibly the reason why the affordances of the environment were perceived and the centrality of play was acknowledged. It is amazingly obvious and yet thoroughly elusive and it goes to the heart of the ways in which children’s music making is too frequently presented. In the current study I had no preconception of what a child’s composition should be, could be or would be. I had no rules to apply, no form to consider and no structure with which to compare. Consequently, I now proudly claim the causality that I have avoided throughout this work; because I had
my eyes open I could see. I have analysed, discussed and represented children’s music making as it was, not what it should be.

There is much in this work about affordance and what the environment and the children’s relationship with that environment afforded. Perhaps the most significant affordance, however, is not about the child/environment but about the researcher/environment relationship. This study (and its environment) has afforded me the opportunity to perceive children doing things in a remarkable way. My relationship with that environment has allowed me to see these things, record these things, analyse, discuss and re-present these things, and hopefully to understand them. More importantly still is that now these wondrously crazy musical compositions and interactions exist outside the world of childhood; they now exist in the academic world. It is our responsibility as educators and researchers to acknowledge that what is presented here are genuine musical interactions. That the music these children made can tell us something about the way they relate musically, perceive musically and express musically. This study has presented a new and different way of looking at the world of children. It challenges researchers and educators to put away preconceptions, to stop adult-erating the things that children do and to celebrate that wonderfully crazy and graceful state of childhood.
References


